

# Air Conditioning & Refrigeration News

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## 'Model' Code Is Now Ready For Cities To Copy

All Industry Organizations Worked To Bring Safety Measure Up-to-date

NEW YORK CITY—At long last the revised Safety Code for Mechanical Refrigeration has received the official stamp of approval through its adoption by the American Standards Association, and its publication last week by the sponsor of the code, the American Society of Refrigerating Engineers, and now stands ready to serve as a model for code makers in municipalities throughout the land.

The new Safety Code for Mechanical Refrigeration was completed this year only after several years of long, hard work in which high company executives and engineering officials from every branch of the industry sat in long conferences with officials from the safety engineering departments of some of the largest municipalities, to develop a code that would be satisfactory to the safety authorities, but which would also incorporate the latest knowledge that the industry had available with respect to current equipment.

Last "national" code was passed in 1933. The trend towards smaller units in mechanical refrigeration, especially for air conditioning, the wider use of refrigeration in general,

It is probable that the text of the revised Safety Code will be published in full in, or as a supplement to, an issue of the News in the near future.

and the development of new refrigerants necessitated the changes made in the new revised code.

A general revision was initiated in October, 1934 when a subcommittee under George E. Hulse of Safety Car Heating & Lighting Co. was appointed, which subcommittee worked on the code in the interests of the American Standards Sectional Committee B9, under the chairmanship of Harry D. Edwards of Carbide & Carbon Chemicals Corp., which is the standing committee of the A.S.A. on a refrigeration safety code.

Other members of the subcommittee were Chester Lichtenberg of General Electric Co., secretary and "driving force" in getting the code through its various stages of approval; W. M. Timmerman of General Electric; C. S. Cragoe of the National Bureau of Standards; Sidney James of the Underwriters' Laboratories; E. T. Williams, veteran consulting engineer; L. S. Morse, executive engineer of York Ice Machinery Corp.; and C. K. Michaels of the Bureau of Fire Prevention, New York City.

The manufacturing groups in the industry set up a special agency to

L. D. James, St. Louis G-E Distributor, Dies

ST. LOUIS—Llewellyn D. James 42, founder and president of James & Co., distributor of General Electric appliances in St. Louis and its Missouri and Illinois trade area, died June 7 at his home in Ladue Village, a suburb, of complications resulting from a fall last year.

Mr. James was a native of Kansas City, Mo. and a graduate of Notre Dame University. Before coming to St. Louis in 1928 to found James & Co., he was head of an automobile finance company in Kansas City.

Surviving are his widow, Mrs. Loretta Hartzler James; two children, Betty James and L. D. James, Jr.; and a sister, Mrs. John P. Harris of Wilmette, Ill.

## Indianapolis Group Debates Question Of Membership

INDIANAPOLIS—Whether a local air-conditioning association should be made up of a small, closely knit group of firms or should include as members the many types of concerns which supply labor and material to the industry was the question before the Air Conditioning Council of Indianapolis at the regular monthly meeting here June 9.

J. S. Milligan, vice president of the council, presided at the meeting, at which Henry Knowlton of AIR CONDITIONING & REFRIGERATION NEWS discussed problems relating to the formation of the proposed National Air Conditioning Association.

Discussion of membership qualifications in the group arose following a report by I. W. Cotton of the I. W. Cotton Co. which interpreted the membership clause in the Indianapolis by-laws according to the best judgment of the membership committee.

Article 2 reads, "Membership is by application and members chosen must actively engage in handling the direct sale and installation of summer and year-around air-conditioning equipment or accessories thereof."

"Acceptance to membership is subject to two-thirds majority vote of the membership present and acceptance constitutes an election to membership."

"Council members are divided into two classifications:

"1. Local concerns assuming full responsibility for the complete installation of air-conditioning systems, known as contractor-members."

"2. Other members comprising suppliers of accessories and promotional groups, known as members, who are locally represented. Each member firm is entitled to one full vote."

Article 2 was interpreted by the Indianapolis membership committee to be construed as follows: (1) Promotional classification includes pro-

## Insurance Rate Cut on Conditioned Bldgs. Seen

ST. LOUIS — Reduction of the present "extra" insurance rates on buildings equipped with air-conditioning systems will be made here shortly, the engineering department of the Mound City Inspection Bureau announces.

The added premiums have been a constant source of annoyance to both underwriters and building owners, since more than fifty classifications existed, resulting in much uncertainty by inspectors and their firms alike. Most of the large office and department store buildings which have in-

(Concluded on Page 24, Column 4)

## Detroit Lubricator Will Sell Air Filter Line

DETROIT—Detroit Lubricator Co. has taken over exclusive distribution of the line of air filters manufactured by Detroit Air Filter Co., which has taken over the machinery, equipment, and materials formerly used by American Radiator & Standard Sanitary Corp. in making the "Arco" filter.

In addition to selling the filters direct to original equipment manufacturers, Detroit Lubricator also will distribute them through refrigeration and air-conditioning supply jobbers throughout the country.

The new filters carry the "Detroit" name, and are of the same type formerly made by Arco. Offices of the company are at 1330 W. Congress St., Chicago. Charles G. Lamb, formerly manager of the Arco plant, has charge of the Detroit Air Filter plant, and the entire personnel of the former company has been retained.

## Wisconsin May Stop 'Discount' Buying By Law

Assembly Passes Bill To Stop 'Purchasing' For Employees

MADISON, Wis.—Seen as a brake to the "discount buying" practices of some Wisconsin industrial concerns is a bill, already passed by the Assembly, which prohibits such companies from selling, or procuring for sale, any goods not handled by them in their regular course of trade.

Only exceptions made in the bill are for meals, candy bars, cigarettes, tobacco, and such specialized appliances as may be required for employees' safety or health.

Passage of the bill by the State Senate is expected shortly, and indications are that the measure will be signed immediately by the governor.

The measure, as placed before the Assembly, reads:

"The people of the State of Wisconsin (Concluded on Page 2, Column 1)

## Shows Wives They Can't Get Day's Purchases In a 4-Cu. Ft. Model

KANSAS CITY, Kan.—Just let a housewife try to pack the contents of a typical Saturday shopping basket into a 4-cu. ft. refrigerator, and she'll soon realize the error of her ways and demand a model really large enough to satisfy the needs of her family, reasons "Nick" Smith, manager of Peerless Electric Co.

And so to help in "selling up" prospects to the larger units, Mr. Smith keeps just such a market basket and its papier mache contents on hand as part of his regular sales equipment. Women are soon convinced, he says, of the false economy of purchasing the smaller, cheaper models.

## April Sales Set All-Time Record In Knoxville

KNOXVILLE, Tenn. — Electrical appliance dealers in this TVA-served town have sold approximately \$565,000 worth of equipment during the first four months of this year, reports C. O. Carpenter of City Electric Sales Department.

April sales amounted to \$174,971, highest in the city's history, dealers reported. This compares with \$145,000 in the previous April. January sales this year were \$103,000; February, \$118,000; and March, \$169,000.

High record in April saw sales of 382 refrigerators, 168 ranges, 88 water heaters, 371 washers, 108 vacuum cleaners, and 484 radios.

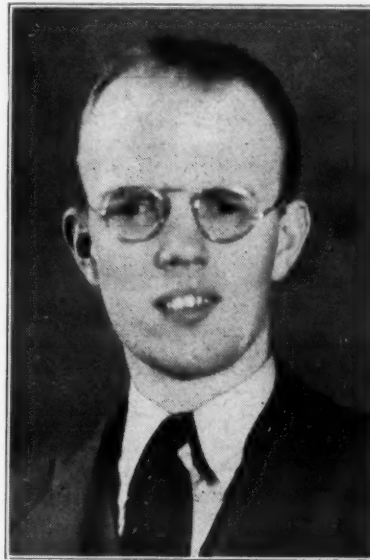
## Refrigeration Session Scheduled For M.I.T. Food Technology Meeting

CAMBRIDGE, Mass. — Recent trends and advances in refrigeration technique will be the subject of one of the sessions of the Second Food Technology Conference to be held here June 28 to July 1 under auspices of the division of food technology and industrial biology of Massachusetts Institute of Technology.

Cooperating in the meetings are the American Society of Refrigerating Engineers, American Institute of Baking, and American Society of Bakery Engineers.

Symposium of food refrigeration will be held on the afternoon of June 30, with George Hulse, A.S.R.E. vice president and chief engineer of

## Planners



A. L. SCAIFE



J. NELSON STUART

## Scaife, Stuart Head Bureau Planning

NEW YORK CITY—A. L. Scaife, appliance advertising and sales promotion manager of General Electric, was elected chairman of Modern Kitchen Bureau's plan committee at a meeting of the executive committee last week during the Edison Electric Institute convention.

J. Nelson Stuart, advertising director of Kelvinator, was named vice chairman of the committee.

Walter Sammin of Commonwealth & Southern Corp. was elected chairman of the kitchen bureau, succeeding George E. Whitwell of Philadelphia Electric Co., who has headed the activity for the past three years.

The committee decided on an electric range drive during September and October, to be known as the National Electric Range Exposition. National magazine advertising on water heaters will be used for the first time in a campaign with "Time to Change to Electric Water Heaters" as its theme.

Electric roaster campaign, now in

(Concluded on Page 2, Column 3)

## Furniture Men Say EHFA Aids 'Fly-By-Nights'

Established Dealer Hurt By U. S. Financing, Association Hears

NEW YORK CITY—Financing of appliance sales by public utilities and extension of EH&FA to urban areas are two trends which may menace the business health of established retailers, Roscoe Rau, executive vice president of National Retail Furniture Association, said last week in a talk at the breakfast forum of the organization.

Utility company financing of appliance sales by small retailers, Mr. Rau declared, tends to encourage a mushroom growth of "small-fry" retailers, without capital or inventory, who mess up the legitimate dealer's profit picture by drastic underpricing.

He intimated that much the same situation might follow extension of the EH&FA's financing activities to heavily populated areas. This agency, he pointed out, is no longer restricting itself to rural areas, as had been originally understood, but is now "out for the gravy of big-town business, to make up for the bitter experiences it has had in some agricultural communities."

In Chicago and Portland, Ore., he told the forum, EH&FA already has entered into arrangements to carry the time-payment paper of small dealers selling appliances.

Public utilities in all parts of the country are eyeing with interest the activities of Consolidated Edison in New York City, Mr. Rau said, particularly in its "bargain package" promotions.

Reactions of merchants, extent to which the load has been built in the area serviced, and the manner in which payments and returns are materializing all are subjects of close scrutiny by other utilities at present, he declared.

He urged retailers to keep in close touch with their utilities, and, if they see a "bargain package" promotion in process of formation, to work with them in developing a program that will be satisfactory to retailers and merit their wholehearted cooperation, rather than their opposition.

## 'Sales Mean Jobs' Drive Cited as Recovery Aid

PHILADELPHIA — Nash-Kelvinator's National Salesmen's Crusade, the "Sales Mean Jobs" movement in which more than 1,100 cities and towns participated as a business betterment move, was awarded the Howard G. Ford trophy as the best business activity of 1938 by the National Federation of Sales Executives.

Presentation of the award was made to Ralph Cameron, Kelvinator household manager, at the annual convention banquet of the federation in the Bellevue-Stratford hotel here last week.

The trophy is a joint award of the Philadelphia branch of the Federation, the national federation, and the Wharton School of the University of Pennsylvania.

Started by Kelvinator in Lincoln, Neb., the Crusade picked up momentum until more than 1,100 cities and towns had employed its principles in seeking business improvement. Carried on throughout the summer months, the drive was credited by several communities with reversing the downward business trend which had formerly prevailed. Many business economists cited the drive as a contributing factor in the business recovery noted about midsummer of last year.



# Major Appliances

## Wisconsin May End 'Discount Buying' With New Law

(Concluded from Page 1, Column 3)

consin, represented in Senate and Assembly, do enact as follows:

"Section 1. A new section added to the statutes to read: 384.54 Sale of certain merchandise by employers to employees prohibited; penalty.

"(1) No person, firm, or corporation engaged in any enterprise in this State shall by any method or procedure directly or indirectly by itself or through a subsidiary agency owned or controlled in whole or in part by such person, firm, or corporation, sell or procure for sale or have in its possession or under its control for sale to its employees or any person any article, material, product, or merchandise of whatever nature not of his or its own production or not handled in his or its regular course of trade, excepting meals, candy bars, cigarettes, tobacco, and excepting such specialized appliances and paraphernalia as may be required in said enterprise for the employee's safety or health.

"(2) Any person, firm, or corporation violating the provisions of this section shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished for the first offense by a fine of not less than \$100 nor more than \$500 and for a second or subsequent offense by a fine of not less than \$500 nor more than \$1,000. Each act prohibited by this section shall constitute a separate violation and offense hereunder.

## Electric Household Corp. Elects New Officers

CHICAGO—Jason Hurley and W. H. Knight have been elected vice presidents of Electric Household Utilities Corp., washing machine manufacturer. Mr. Hurley will have charge of operations in the company's central division, and Mr. Knight, who will make his headquarters at Newark, N. J., will take over similar duties in the East.

## EH&FA To Finance Gas Appliances

WASHINGTON, D. C.—As a further aid to small business, Electric Home & Farm Authority has extended its service to include the purchase of instalment contracts covering gas appliances for domestic use.

By April 30 of this year EH & FA had purchased 115,565 electrical appliance instalment contracts from 2,947 dealers in 33 states. Aggregate value of these purchased contracts was \$17,566,391, of which \$9,103,889 had been repaid.

## Perfection Not Guilty, U. S. Court Rules In Patent Suit

CLEVELAND—Ending the suit brought by Motor Wheel Corp., manufacturer of Duo-Therm oil burners, against Perfection Stove Co., manufacturer of Superflex oil heaters, which charged that the Perfection heaters constituted an infringement of Valjean patent No. 1512869, the U. S. Court of Appeals for the Sixth Circuit has handed down a decision affirming the "not guilty" decree issued July 3, 1936, by Judge Paul Jones of the U. S. District Court for Northern Ohio.

The case was originally heard by a Master in Chancery, who submitted a report to the Court in November, 1935. This report pointed out the respects in which the construction and operation of the Superflex burner differed from that of Valjean's patent, and the respects in which the patent was limited by the prior art, but recommended that the claims of the plaintiff be held valid and the patent infringed.

Judge Jones, however, sustained the Perfection Stove Co.'s claims of non-infringement, in a decision handed down on July 3, 1936. He said, in part:

"I would not go so far as to say that the prior art patents relied upon by the defendant completely anticipate Valjean, but I do think that the disclosures in the elements of these earlier patents so confine the present patent as to free the defendant's Superflex heater from the charge of infringement."

Following that decision, the plaintiff filed an appeal to the Court of Appeals. This appeal was heard by Judges Hicks, Simons, and Hamilton. In a decision written by Judge Simons, that court (on April 7, 1939) unanimously affirmed the decision of Judge Jones and held that the claims of the Valjean patent were not infringed by the Superflex heater. A portion of this court's decision follows:

"We do not apply to the change made in the accused device the test of patentability, since we have held . . . that superiority of operation, even when brought about by a valuable improvement which perhaps was patentable as such, will not of necessity negative infringement.

"It is clear, however, in the present case, that Valjean's inventive step resides in the peripheral slot which, spaced between walls of combustion chamber and carburetor in register, directs the flow of air across, athwart, and horizontal to the rising streams of fuel mixture.

"Without this element so precisely defined and claimed, it would be difficult to concede (as we do) validity to the claims. In structure, function, and results it is the heart of Valjean's achievement, its importance stressed in the patent and emphasized by its history. We think the claims are not infringed. . . ."

## Kitchen Bureau Promotion Put To Work In Indianapolis



Prospects could see for themselves how little electric cookery actually costs in the range display of Indianapolis Power & Light Co. at the recent Home Show in that city. Daily menus for a week for a family of four people were prepared in the exhibit, and actual cost figures compiled on the basis of Indianapolis power rates. During the first four days, cost of preparing the meals (the range was used in every one) was less than 25 cents.

## 4 Distributors Contribute To 'Old Icebox' Pool

NEW YORK CITY—Four of the 14 distributors participating in Consolidated Edison Co.'s "old icebox round-up" have made payments into the dealer dividend pool during the last two weeks, but the other 10 continued to hold up their contributions to the fund.

A payment of \$4.67 per unit, the first so far, was made by Consolidated Edison as Electrolux distributor. Royal Eastern Electrical Supply Co., Universal distributor, paid in \$24.60 per unit, as compared with the first payment, a month ago, of \$39.20.

Crosley made a payment of \$8 per unit, compared with its first payment of \$7 per unit, and Wholesale Radio & Equipment Corp., Stewart-Warner distributor, was scheduled to make a second payment, unit amount of which was not determined.

## Charles Kellogg Is Elected Kitchen Bureau President

(Concluded from Page 1, Column 4)

progress, is producing sales and will be continued.

Charles W. Kellogg took office during the E.E.I. meeting as the first paid president of the kitchen bureau. Howard S. Bennion, formerly assistant managing director, was elected managing director to succeed Bernard F. Weadock, who resigned to resume his law practice.

## Price Should Be No Obstacle To Sales Of Dishwashers, Hirose Tells Nema

HOT SPRINGS, Va.—Ways to push the electric dishwasher into a volume sales position in the appliance field were outlined for members of the dishwasher section of National Electrical Manufacturers Association at their spring meeting in a study made by Arthur Hirose, director of research for McCall Corp.

First electric household dishwasher was placed on sale in 1913. While many of the early models were not too efficient, today's washer is an amazingly adequate household servant, says the report, which tags it with these advantages:

Electric dishwashers today save labor and eliminate drudgery, since the average housewife, in her lifetime, washes a pile of dishes, glasses, silverware, pots, and pans 17 miles high.

Electric dishwashers save time—probably more than almost all other household electrical appliances combined. It has been estimated that an electric dishwasher will save the housewife as much as six hours a week, almost one whole working day for many industrial workers.

The dishwasher saves dishes from breakage—an advantage especially to the woman who owns dishes which are not in the "open stock" class.

The dishwasher saves the whole family's temper and eliminates the petty bickering that goes on in many homes where someone, after each meal, must wash and dry the dishes.

The dishwasher cuts down the necessity for buying and laundering dish towels and dish cloths.

Since the dishwasher uses a minimum amount of measured detergent, it saves soap.

The housewife's reputation as a spotless housekeeper is preserved by the electric dishwasher which turns out dishes that are always sparklingly clean.

The electric dishwasher saves health and cuts down doctor's bills.

Pride of ownership has much to do with the sales success of the automatic refrigerator, the electric range, and the electric roaster. The same appeal of newness and modernity lies in the dishwasher.

The dishwasher saves women's beauty, and prevents "dishpan hands," which are flayed diligently in the advertisements of soap, lotion, and hand cream manufacturers.

Seven recommendations were made to the electric dishwasher industry by the study. These were: 1. Keep up product improvements, 2. Define your market realistically, 3. Keep to a price policy, 4. Improve distribution, 5. Have a definite sales program, 6. Realize the importance of the dealer and his salesmen, and 7. Make Mrs. Consumer say to herself, "I want an electric dishwasher."

The study analyzes three supposed obstacles to dishwasher sales: (1) The question of retail price, (2) The need for hot water, and (3) The fact that permanently installed dishwashers need plumbing.

On the matter of price, it is pointed out that as recently as 1931 over 900,000 families bought electric refrigerators, which were never sold as great labor-savers, at an average retail price of \$258. Clothes washers, which are used but once a week in the average home, are being sold at prices as high as \$169.50. Electric ranges also have relatively high retail prices, when compared with ranges using other fuels, and yet are bought in large quantities by women who find price no obstacle. Since the electric dishwasher is a great labor-saver, its retail price is quite reasonable.

While granting that 3 or 4 gallons of water heated to 140 or 160° are desirable in the operation of electric dishwashers, the report points out that over 300,000 electric water heaters have been sold in the past three years.

**A "whale" of a lot better . . . . .**

**BUSH CIRCULATOR COILS**

ALL BUSH Circulator Coils are constructed with one full inch of insulation encased in heavy-gauge aluminum sheets . . . further insulated with specially treated paper, wood and fibre to prevent cold conduction. Just ONE example of BUSH advanced engineering. Write for your copy of the NEW Catalog.

**SINCE 1907**

**Bush Mfg. Co.**

**Finned Tube Products**

HARTFORD - CONN. 610 N. OAKLEY BLVD. - CHICAGO - ILL.

**TWO PROFIT OPPORTUNITIES**

**Copeland** Household Refrigeration **Copeland** Commercial Refrigeration

Both products of 20 years experience. Both recognized by experts as the "last word" in modern refrigeration—efficient, thrifty, long-lasting. Write today for facts about either or BOTH of these Copeland Profit Opportunities.

COPELAND REFRIGERATION CORPORATION  
Sidney, Ohio



# CROSELEY FREEZORCOLD TWO TEMPERATURE

puts Crosley dealers  
in the refrigeration busi-  
ness head and shoulders  
above competition.

## SHELVADOR

### 1 FREEZING COLD STORAGE

for meats, game, frozen food, ice cream, pie dough. Gives women NEW ideas on home refrigeration—advantages of frozen food sales—provides EXCUSE to get rid of old, outmoded refrigerators.

### 2 MOIST FOOD STORAGE

High humidity efficiently obtained by use of secondary coils keep cooked and other foods at peak of flavor—does not dry them out—keeps vegetables garden fresh for incredible time.

### QUALITY PRODUCT

Freezorcold Shelvadors incorporate every proven practical feature of standard refrigeration. Fabricated from A-1 materials throughout in the finest plant of its kind in the U. S. Equipped with quick ice cube release, high humidity crisper, sliding and removable shelves, illuminated cold control, interior light, improved electro-saver, hermetically sealed power unit. Dulux finished exterior, acid resisting porcelain interior, brilliant, oversized sturdy hardware.

**NO OTHER  
REFRIGERATOR  
COMBINES THESE  
3 ADVANTAGES**

### 3 PRACTICAL SHELVADOR

It is to be expected that such a practical method of making ALL refrigerator space usable would be imitated.

But the Shelvador is a feature of convenience that does not cut into the space inside of the refrigerator.

—and the entire refrigerator is accessible by the opening of only ONE door.

The Shelvador's efficiency and convenience is attested in signed statements by women from one end of America to the other.

**PRICES START BELOW \$200.**

# ONLY

# 15

**TO \$20. MORE THAN PRICES  
OF COMPARABLE REGULAR & DeLuxe SHELVADORS**

### CROSELEY REALLY OPENS THE PROFITABLE REPLACEMENT MARKET

Here is an entirely NEW refrigerator that will revolutionize home refrigeration. It will be a source of steady business for alert dealers right through this summer and next winter.

**THE CROSELEY CORPORATION**  
POWEL CROSELEY, Jr., Pres. Home of "the Nation's Station"—WLW—70 on your dial CINCINNATI  
See the Crosley Building at the New York World's Fair

**MAIL COUPON TODAY**

Crosley Corporation,  
Cincinnati, Ohio.

Send me literature,  
discounts and information on products  
I have checked.

**I WANT TO  
MAKE MONEY**

Name.....

Address.....

City..... State.....

- ☐ Crosley Automobile
- ☐ Freezorcold Shelvador
- ☐ 6 ft. LEADER Shelvador at \$99.50
- ☐ Crosley Press Jr. Camera
- ☐ Crosley Radio
- ☐ Reado facsimile
- ☐ Washers and Ironers
- ☐ Gas and Electric Stoves



## Business Is Good In Baton Rouge, La. & Appliance Dealers Are Getting Their Share Through Intensive Specialty Selling; Dealers In Suburbs 'Invading' Durham, N. C. Market

By Phil B. Redeker and Robert M. Price

### Baton Rouge, La.

Conditions are such in the Louisiana state capital that a modern Horace Greeley might counsel young men to "Go South." Baton Rouge citizens claim that their city has about doubled its population in the past five years, and that the influx of new industry which helped this population spurt is still continuing.

This growth in the market has helped refrigerator dealers tremendously, of course, but it must be said of them that they have not been caught napping. Comparing the operations here with those in many other communities, an observer could not help but noticing that the majority if not all the dealers in Baton Rouge are using intensive, specialty selling methods, sending men outside to canvass and sell, rather than trying to lure buyers into the store with trick bargain advertising and promotion.

### Dalton's—Where Volume Increases

A department store, Dalton's has an appliance department which has consistently shown an improved sales picture year after year.

Much of the department's success is due to the able management of Louis Glueck, who directs the activities of the department with considerable intelligence, and who tries to follow all the tested methods of appliance sales promotion besides trying a few of his own, with the result that this consistent, planned effort brings an improved sales volume each year.

Business has been good with Dalton's this year; sales were ahead for the first quarter, and April appeared to be stacking up on even terms if not better with April, 1938, which Mr. Glueck indicated was about the best month that Dalton's had enjoyed in the appliance business.

C. J. Bahm, star salesman of the organization, who was the first man in the country last year to make his quota for the Frigidaire B.T.U. "Quota Club," national salesmen's organization, is on his way to repeating his record this year, and M. S. Morgan, another star salesman and B.T.U. "Quota Club" member, is also on his way to making another record showing.

The complete story of Dalton's appliance selling methods were described in a story in the June 7 issue, but just to give some of them in outline form:

(1) Keynote of the operation is the spirit of cooperation fostered among the personnel. Mr. Glueck makes it a point to try to talk to each prospect the salesman brings into the store, to help the salesman close him. Under a card system the salesmen are protected on their prospect, but they try to close another man's prospect just as hard as they would their own, because they know the other man would do the same for them. This results in a lot of sales that might otherwise be lost through the indifference of salesmen to such prospects.

(2) Salesmen concentrate on a particular appliance. Occasionally they may sell others, but generally speaking they stick to the one item.

(3) Prospects are followed up systematically. A Master Prospect list is worked over continually by phone and personal contact. Lists of users are maintained by appliance and by year of purchase, and salesmen are urged to make frequent follow-up of the lists.

(4) All kinds of advertising and sales promotion methods are used, and Mr. Glueck has one window of the store in which an appliance display is kept at all times, and he also has a "spot display" near the elevators at all times. He has found club demonstrations particularly effective in getting names of prospects, and his rules for conducting them are (a) pay a good price for the names, they'll listen better; (b) give a bonus for major appliances sold from such names within 30 days of the demonstration; (c) keep the kind of people that come to demonstrations under control (adults and householders only); (d) try to have the demonstration in the store, so that the women will have a chance to look around and inspect the displays.

(5) A flexible plan on terms to give each customer the arrangement most satisfactory to him. The store handles its own paper.

### Fast Selling Methods Keep Sales Brisk

New link in the chain of appliance stores operated by Household Appliance Co., which has its headquarters in New Orleans, is the Baton Rouge store managed by M. N. Pooley.

These stores apparently work on an oldtime, fast promotion, high speed, specialty selling basis. The store occupied is big and fancy, the selling methods used are fast and fancy, but the point is that members of this organization still believe in going out and selling appliances, and as a result, Mr. Pooley declares that business has been pretty brisk.

Mr. Pooley is a "trader." His motto is "give the customer what he

wants." That's why he carries two lines (General Electric and Stewart-Warner), and why he has a variety of financing plans ("let the customer pay for it like he wants to").

Trade-ins? Mr. Pooley has a system for that problem too. He has a "low-priced" special on which he has apparently boosted the list price, and he does all his trading on this particular box—he has a lot of leeway.

Sometimes he may even go so far as to lose money on a trade. The reason? "It's good advertising to say that you gave better on the deal than your competitor. Chances are the man who heard it won't be quite so tough."

New in the city, the store is using both newspaper and radio advertising to attract the attention of prospects. But the principal promotion stunt is a prize-drawing, in which appliances are given away, which is conducted right in the store, so that the prospects have to expose themselves to the salesmen in order to get a chance at the prizes.

### Marks Tells Why Small Dealer Is Endangered

"The manufacturers—or the Federal Trade Commission—or both, are going to have to take some steps to keep the small appliance dealer in business," declares Melvin L. Marks, manager of Baton Rouge Radio & Electric Co.

"The many forms of unfair competition that are piling up on the dealer are making it almost too tough for him to sell refrigerators," Mr. Marks continued.

Asked to specify just what was unfair about his competition, Mr. Marks detailed the following:

Time-payment plans. The finance companies limit him to a 10% down payment and 30 months terms, while the local power company, he claims, makes sales on a 5% down and 36 months to pay basis, while department stores carrying their own paper may be even more liberal—especially if there is any kind of a fight for the sale.

Utility merchandising methods. According to Mr. Marks, the utility is not interested in making money from its appliance merchandising, but merely wants to put as much load upon its lines as possible, in as fast a time as possible.

Since the utility's salesmen work on a salary, the dealer continues, they are interested in only one thing—making a certain number of unit sales, no matter what sort of a price they may get for the refrigerators.

Guarantees. Two principal things wrong with guarantees, in the viewpoint of Mr. Marks, are that they

## Research Is So Fascinating



Billy Rose's Aquacade (New York World's Fair) showgirls are surprisingly good swimmers. They can also fry eggs, as you can see for yourself in the bottom picture, where they are about to fry one electronically in a bowl which "floats in space" in the General Electric House of Magic at the Fair. Bill Gluesing of the G-E exhibit (top picture) also managed to find time to show a sun motor to the swimmers.

mislead the buyer into expecting a guarantee on the whole refrigerator for five years (if anything goes wrong, they want it fixed free of charge), and the amount of red tape that a dealer must go through (getting an affidavit from the customer, etc.) in order to get his costs when he does replace a unit in the guarantee period.

"Why even when they chip the finish they want you to fix it up for them," declared Mr. Marks in describing the user's attitude, built up by a misleading conception of the guarantee.

"About the only thing to do is to ask them if they would expect an automobile dealer to fix a fender they dented in during the 90-day guarantee period on a car. They know that they can't expect any such service from a car dealer, why should they expect it from a refrigerator dealer?"

Manufacturers must make up their mind as to whether or not they want the small, specialty dealer to stay in business, thinks Mr. Marks, and if they do, they better figure out ways to help the dealer—at least to put him in a more competitive position.

### 25% Increase Reported By Stirling-Doherty

Longtime General Electric dealer, the Stirling-Doherty Co. is finding business good this year, an increase of about 25% being shown in appliance sales for the first 3½ months.

The company's many years in the business, plus the fact that it handles a complete commercial refrigeration and air-conditioning line, provides a somewhat stable flow of business, but the firm keeps a number of sales-

men busy on a "specialty" outside selling job.

Stirling-Doherty prefers not to compete for the type of business in which a customer wants the refrigerator for "no down payment, and three years to pay." Since the company handles some of its own paper, it sifts out the bad credit risks as carefully as possible, and tries to take only those jobs on which a profit will be realized—for good.

### Durham, N. C.

"Sneak-thief" dealers coming into the local territory from surrounding small towns to take sales away from local dealers by offering "real price reductions" are causing demands by Durham, N. C. dealers for a closer policing by distributors.

Many sales are taken right from under the noses of the local dealers by these border-line operators, who, according to the report, are content to sell at a very small mark-up. As there is a marked tendency for this year's buyers to jump at low-price "bait," the stolen sales are mounting and the Durham dealers are howling.

Although complaints of not being able to compete with the terms of the utility were registered by some dealers, Lee C. Goodwin, manager of new business for Durham Public Service Co., countered with the opinion that his company feels "that there is a place in the merchandising picture for both the dealer and the utility; and if properly handled, can be made to work to the advantage of both."

As proof of his statement, Mr. Goodwin stated that the utility's (Concluded on Page 5, Column 1)

## Combustioneer —to Make Sales for Dealers Today

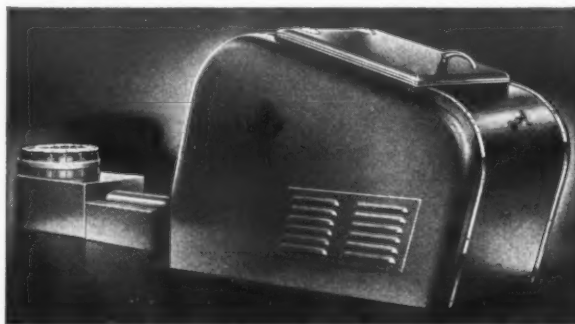
Combustioneer officials were pioneer dealers in automatic coal heat. From actual selling experience they know what prospects want in an automatic coal burner. That's why Combustioneer has what it takes to make sales today.

Eye-appeal—loads of it! Exclusive features that dramatize Combustioneer's superior heating and money-saving advantages.

Precision-built quality that prospects can see and appreciate.

Prices that make Combustioneer the "buy"—the big value of the year.

Mail the coupon today for Combustioneer's new Profit Plan—including Package Price with controls and localized sales helps. Make more sales with Combustioneer this season.



**Combustioneer**  
AUTOMATIC COAL BURNER

### MAIL THIS TODAY

COMBUSTIONEER DIVISION, The Steel Products Engineering Co., 118 Dakota Ave., Springfield, Ohio.

Send your new proposition to:

Name.....

Address.....

City..... State.....



## Utility Official Thinks Dealers' Criticism Unfair; Price-Cutting Tactics Decried

(Concluded from Page 4, Column 5) program of dealer cooperation includes promotional advertising and a variety of other sales aids to dealers. All electric ranges sold by dealers are serviced by the utility during the free-service period. Entrance lines and switches are installed on all ranges sold on Durham Public Service lines without charge.

This spring a "bargain package" merchandising plan was offered to dealers. The package included four electrical appliances—a General Electric radio, a six-way I.E.S. floor lamp, a Westinghouse iron, and a Silcox coffee maker. Regular price of this combination was listed at \$56.10; the sales price was \$29.95. These items were offered to dealers and they were to receive 17% on the sale.

Dealers were not required to buy the items, but merely to stock them. The \$2.85 down payment, and the \$2 a month instalments were paid at the utility office. Dealers merely sold—and collected their percentage.

### 'Suburban Dealers Grab the Sales'

Blunt and to the bitter point was the information on the refrigerator market heard at the R. E. Quinn Furniture Co. "Business is not so hot," said Mr. Quinn, "and the reasons are plain. There is a prevalence of price cutting here that makes the sale of refrigerators extremely hard if the dealer wants to make any money."

"Not only do the dealers in town make it tough, but every little dealer for miles around sticks his hand in to grab the local appliance plums."

"The way things have been going, after I get rid of my present stock of refrigerators I don't care if I ever sell them again," he finished.

### Flexible Credit System Helps Myers' Sales

At the Myers Appliance Store (this company has outlets in Durham and Greensboro) sales were reported as better than last year up to the first of May. This store has sent its salesmen back on the old cold canvass to catch the spring business.

To sweep in the low-income buyers the store carries a cheaper box, sold under the trade name "Allied." Regular line is Frigidaire. Because many of the buyers are in the low income brackets (Durham having a large number of mill workers in the giant textile and tobacco factories) credit must be carefully checked. However, when this credit is carefully established, the Myers store offers a low payment, which is a good way, they feel, to get the first crack at this type of buyer.

The store also carries its own paper, making a more flexible credit system, which, it is said, is most necessary to meet the local conditions.

### 'Business Is Humming At Mail-Order Houses'

Just to check on the stories of dealers in almost every city visited on this survey, as to the big gains made in mail-order refrigerator sales, a call was made on the refrigerator department at Sears, Roebuck & Co. Here the manager bore out the opinions of other dealers that "business is humming at the mail-order houses."

### Blackwood's on Lookout For Appliance Man

Might be a good chance for a bright young appliance manager at Blackwood's, Inc., local store, for they were on the lookout for a man to take charge of their new refrigerator department when we called there. Hotpoint and Gibson refrigerators are carried. Blackwood's is an automobile accessory store that has turned to the selling of refrigerators as an extra line.

They apparently believe that refrigerators cannot be handed "over the counter" like parts and tires; hence, the search for a man to search for refrigerator prospects.

### Profits In Pianos Attract Salesmen

Where a store is selling two main items and one offers the salesman a good profit and the other does not, it is plain to see on which item the most selling time will be spent. In the case of W. R. Murray Co., Hotpoint and Westinghouse dealer, the profit item is pianos; the non-profit item refrigerators.

Last year about 75 refrigerators were sold, always with an eye to maintaining price, according to the appliance manager. It was also charged that the distributors sell direct, especially on apartment house deals. On one particularly good deal the one distributor "advised" the dealers not to go over 10% mark-up if they wanted to have a chance at the sale.

### Stephenson Hardware Named Dealer For Kelvinator

CHESTERFIELD, S. C.—Stephenson Hardware Co., owned and managed by E. E. Stephenson, has been appointed Kelvinator dealer in this territory.

### Westinghouse Restores Pay Cut To 8,700

EAST PITTSBURGH, Pa.—Improved business brought full restoration of pay reductions for 8,700 salaried Westinghouse employees on June 1.

Employees affected have been receiving 90% of their base rates since June 1 last year, when reductions were made in a retrenchment move against falling business at that time. Salaried workers getting less than \$125 per month were restored their full rates six months ago.

The company's wage and salary plan, from which all employees receive extra monthly pay, based on the average profits of the three months preceding, will continue to function. Under this plan, employees have received extra pay each month, except one, for the past three years.

### Donovan Leaves Nema For Owens-Corning Post

TOLEDO—C. R. Donovan has resigned as representative of National Electrical Manufacturers Association's business development activities to join Owens-Corning Fiberglass Corp. here.

In his new position, Mr. Donovan will assist in developing applications and broadening acceptance of "Fiberglas."

## When Business Starts Lagging, Dealer Bets Salesmen He Can Produce & Does—With Scientific Selling

By Robert M. Price

DES MOINES, Iowa—Every time he gets fed up with the way his appliance business is going, or the way his salesmen are producing, Joe Shinner, proprietor of Home Equipment Co., Norge dealer, goes out on a cold canvass of his own.

What's more, he bets his salesmen that he can produce a sale within a certain period in any neighborhood they pick. And he makes the sale, for showing salesmen the way is Mr. Shinner's business hobby. He believes in "scientific selling," and surrounding himself with salesmen who can make selling a science.

To be father of this type of selling is Mr. Shinner's idea of a good sales manager. What is needed, he thinks, is a sound background of sales training. Although he has spent 11 years in the appliance business, he says he's "only starting to learn the fine points." Reaching in his desk, he hauled out about five well-thumbed books, prominent among them Dale Carnegie's "How to Win Friends and Influence People," and Dave Colcord's "Yourself."

"A lot of people laugh at these 'sell yourself' formulas," said Mr. Shinner, "but if the salesman today would absorb a few of the obvious truths of sales psychology contained in these books, he wouldn't be holding an empty bag."

"I don't know sales psychology, but I'm learning, and the men who work for me must learn with me." Every morning he holds a sales meeting, in which each sales call of the previous day is reviewed and studied to learn what method was used—and improvements suggested from experience or "book learnin'."

Joe Shinner got the idea of forgetting facts and selling from the heart from an experience he had. One day a ragged chap blew in the store and asked for a job. What did he know about appliance selling? Nothing. But he pounded the desk, exhibited a broad smile, and insisted, "Mister, I can SELL."

And without any knowledge except how to win people over, he went out the next week and did such a job of selling that Mr. Shinner thought he had found a walking gold mine.

Then, without warning, this wanderer disappeared. He served his purpose, because Mr. Shinner never forgot that this man sold, armed with absolutely nothing except a sincere conviction that he could.

Home Equipment Co. hasn't a big store—not yet. At present it is housed with an independent service shop. Service customers build up the floor traffic for the appliance store.

**Bronze bearings that reflect research by the Bureau of Standards**



Every Brunner Unit is tested for Underwriters' Laboratories Approval and Carries the U. L. Seal

It is significant that Brunner refrigeration units are protected by bronze bearings at all rotating points. For here, viewed from the standpoint of long-time service, are vital points of construction... Not relying alone on their own knowledge of bearings, Brunner engineers carefully reviewed the research findings of the United States Bureau of Standards—the methods to improve the physical properties of bearings by alloying bronze with other metals. After extensive study and practical tests, the present Brunner bronze bearings were developed—

exceptionally hard, tough, wear-resistant... This, you may say, is but a detail. We say: check other Brunner details of construction! Throughout the entire Brunner design you will find the same well-thought-out engineering, all pointing to that dependability for which the Brunner is recognized... Brunner refrigerating and air conditioning equipment includes air and water cooled condensing units from ¼ H. P. up to 15 H. P. for all types of installations. Catalog promptly on request. Brunner Manufacturing Company, Utica, N. Y., U. S. A.

**The Symbol of BRUNNER Dependability**



# Air Conditioning

## Improvement of Pig Iron Is Believed Obtainable With Humidity Control

WOODWARD, Ala.—Control of moisture in the air supplied to a blast furnace of the Woodward Iron Co. here, for the purpose of producing greater uniformity in pig iron, is a move watched by iron and steel manufacturers throughout the country to determine if this method is successful from an economical and practical standpoint.

Pig iron is reduced from ore in huge blast furnaces which are often more than 100 feet high. Ore is carried to the top of the furnace by means of an open elevator, and dumped into an opening provided for this purpose. Quantities of coke or charcoal are mixed with the ore to provide products of combustion which serve to reduce the ore to a molten mass. Air is introduced at intervals in the process to supply the oxygen necessary for complete combustion.

Refrigeration and air-conditioning equipment is used to control the moisture content of the air used during the ore reduction process. Twenty-seven hundred tons of air are cooled each day to a predetermined dewpoint, then heated to a temperature of 1,000° F. with no water added.

A daily average of 20 tons of water are removed from the air. The conditioned air is then blown at a pressure of from 5 to 30 lbs. per square inch into the blast furnace. At this point in the process the furnace emits smoke and flame through the hopper at the top, lighting the sky for miles around.

At the end of the melting process molten ore is drawn from the furnace by workmen, who knock out a specially constructed clay plug near

the bottom. The ore flows down core sand channels into sand molds, where it hardens into elongated bars known as "pigs." The quality of the pig iron is known to have a direct bearing on the quality of castings, malleable iron, or steel made from the crude iron.

This installation was given recognition in the June 12 issue of Time magazine, in the following article:

"In Woodward Iron Co.'s plant near Birmingham, Ala., a huge centrifugal refrigerating machine is being installed alongside a giant dehumidifier cased in concrete. This installation, first of its kind, is being hooked up, not to any building but to Woodward's fiery blast furnaces where the 57-year-old company can turn out enough iron (annual capacity 450,000 tons) to make it the second largest southern merchant producer ('merchants' produce pig iron for sale to foundries, mills).

"Pig iron makers have tried for years to turn out a uniform quality iron. Till now this has depended on the varying accuracy with which blast furnace attendants, watching the flame through peep-holes, regulate the forced flow of air whose moisture was at the mercy of the weather. With the new Carrier outfit, already proved experimentally, no flame regulation will be necessary; it can condense an average of some 20 tons of water out of Birmingham Valley's smoky atmosphere daily, feed air of constant low humidity into the furnace. If successful, the new air-conditioning trick will remove one more human element from smelting, make pig of new uniformity."

## First Complete Air-Conditioning System Is Installed In Paterson N. J. Dept. Store

PATERSON, N. J.—Refrigerating machinery capable of producing daily cooling equivalent to that given off by the melting of 434,000 pounds of ice in 24 hours, and some 1½ miles of ductwork are convincing arguments in support of the claim that Meyer Bros., is the first completely air-conditioned store in these parts.

Each of the store's five floors is divided into two or three zones, so that constant comfort conditions may be maintained regardless of sun or heat load caused by large crowds.

Air can be diffused so rapidly that a complete change of air can be effected every 15 minutes.

Use of an evaporative condenser

on the job, it is claimed, saves enough water every 90 minutes to fill a 25 x 50-foot swimming pool to a depth of 4 to 8 feet.

In winter, the system provides correct humidity conditions and heat control. Regulation of humidity is accomplished through use of large dampened surfaces in the air-conditioning units. This equipment, used in series with air filters, also aids in maintaining cleanliness of air.

In addition, the system provides for seasonal regulation. Reheat is provided in connection with the cooling, so that comfort conditions may be maintained during between-season periods, and on unseasonably cool and humid days.

## Conditioning Takes Public Eye as Two Exhibitions Are Held In Chicago

CHICAGO—Air conditioning took the public eye here last week when the annual exhibit, sponsored by the Commonwealth Edison Co. and held in the company's building, opened simultaneously with an exhibit held in connection with the Heating, Piping & Air Conditioning Contractors' national convention at the Drake hotel.

Large display advertisements in the Chicago daily papers announced the utility company exhibition, which was divided into three sections, commercial air conditioning, room coolers, and attic ventilation. Commercial displays were located on the second floor of the Commonwealth Edison building, while the other exhibits were found in the first floor appliance sales department.

### ROOM COOLER SALES UP

Room cooler sales made in Chicago by the utility are 50% higher than last year, according to G. G. Freyder and G. D. Weatherbee of the retail sales department. Mr. Freyder reports that the public is interested in (1) price, and (2) size, in the selection of room cooler equipment. Present tendency is to favor small units which are low in price, Mr. Freyder said.

Units sold by the Commonwealth Edison Co. at retail are as follows: Westinghouse ½-hp. air cooled (prior year model) \$224.50; Frigidaire ¾ hp. air cooled \$419, water cooled \$359; Philco-York ½ hp. \$151, ¾ hp. \$281, 1 hp. \$440; Kelvinator ¾ hp. \$285, 1 hp. \$415, 1½ hp. water cooled \$535; Carrier ½ hp. \$269.50, ¾ hp. \$425, and 1 hp. (prior year model) \$324.50.

The company has installed a number of Philco-York ½-hp. units mostly in the small operating rooms of dentists, and users report that operation to date has been satisfactory. Care is being taken that the units are not overloaded when applications are made, Mr. Freyder said.

### OUTSIDE SELLING NECESSARY

A six-man crew is employed in the sale of room coolers by the utility. Last year the company attempted to sell this type of equipment by means of floor display only, but found that prospects for room coolers will not "walk in and buy," but must be contacted in their own offices. Salesmen for the company canvass downtown office buildings and contact the offices of all professional men in the city. A number of sales in residences have resulted from this method.

Since Jan. 1, 1939 it has been necessary to take out a city permit for the installation of room coolers in Chicago, units under ½-ton requiring payment of a \$1 fee and units from ½ to 1½ tons a \$6 fee. In addition, room coolers must be equipped with a safety relief valve which costs approximately \$9. Electrical regulations in Chicago permit

"plugging in" all air-cooled models (so long as the circuit is not overloaded) but require standard thin-wall conduit hook-ups on water-cooled units. All room coolers are subject to inspection by a refrigeration inspector, electrical inspector, and if water cooled, by a city plumbing inspector.

Promotion of commercial air conditioning in Chicago is handled by Knight C. Porter and Wm. P. Rock, who were in charge of the commercial exhibits. The company does not sell commercial air-conditioning installations, but only assists the trade in securing prospects and effecting sales.

Exhibitors of commercial equipment at the Commonwealth Edison Co. show included Westerlin & Campbell (York), Airtemp Sales Corp., Standard Air Conditioning Co., Murphy & Miller (Kelvinator), Airtard Corp. (window ventilators), Fairbanks-Morse & Co., General Electric, Frigidaire, Baker, Midwest Equipment Co. (Frick and the Leak Alarm), Kroeschell Engineering Co. (Westinghouse), General Refrigeration Co. (Lipman), and Air Comfort Corp. (Carrier).

All of the exhibitors featured 3 and 5-ton store cooling units, but some room coolers and window ventilators were shown in the commercial air-conditioning exhibit.

### ATTIC VENTILATION

An exhibit of attic ventilating and pedestal type fans revealed a number of interesting developments in this field. One of the most important was three new Ilg units, exhibited by the Ilg Electric Ventilating Co. of Chicago. The smallest of these fans, known as the Ilg "Rollaire," is mounted on a chrome plated steel pedestal which is fitted with casters. Purpose of the fan is to exhaust air from an open window in any small residence or apartment. The unit may be easily moved from room to room. Capacity is 1,950 to 2,600 c.f.m. depending on motor speed. Price of the Ilg Rollaire is \$99 in Chicago.

Two other Ilg units of similar construction are built for use in attics. These fans do not have housings, but are allowed to run free near a louver covered opening in the end of any attic. Capacities range from 3,080 to 7,600 in the two models, depending on motor speed. Price of the units is \$108 and \$135 installed.

### ACTIVE MARKET

All motors used on the Ilg Rollaire and attic ventilating units are totally enclosed ball-bearing units, similar to those used by the company for wall-mounted ventilating fans.

Miss Ann O'Neil, who was formerly associated with Apex, Conlon, and Bendix in the demonstration of home laundry equipment, and who now sells Ilg ventilating equipment at retail in Chicago, reports that an active market exists for this type of equipment. Miss O'Neil left home laundry demonstration work to sell attic ventilation, because fans of this type are now being sold to a high income group and sales resistance is less, she believes.

Other exhibitors at the utility ventilation show, which was under the supervision of Roger B. Kellogg of the company's lighting sales department were: Hunter Fan & Ventilating Co. of Fulton, N. Y.; Westinghouse (office fans); Wagner Electric Co.; American Blower Corp.; General Regulator Co. of Chicago; Airmaster Corp.; Reynolds Electric Co. of Chicago (featuring a pedestal fan with air delivery directed toward the ceiling); Autovent Fan & Blower Co. (large attic fans); General Electric Co.; Robbins & Myers, Inc.; Air Controls, Inc. of Cleveland (Rex-Airate); and Airtard Mfg. Co. of Chicago.

### HEATING AND PIPING SHOW

Exhibits at the Heating, Piping & Air Conditioning Contractors' national convention at the Drake hotel were dominated by the heating industry. Members of the association, guests, and friends of the organization attended the exhibits which were open during the four-day convention.

Considerable interest was shown in the exhibit by steamfitter apprentices from the Washburn Trade School, showing work that has been done by students who are learning a trade under the program sponsored by the Chicago Heating & Piping Contractors, the Chicago Master Steamfitters Association, and the Chicago Board of Education. Cash prizes were awarded to three students from the school following a competitive examination on heating and air-conditioning practice.

### MANY EXHIBITORS

Exhibitors at the Drake hotel exhibition included: American Blower Corp.; American Radiator Corp.; Bell & Gossett Co.; C. H. Bevington Co.; Carrier Corp.; Chicago Master Steamfitters Assn.; Chicago Pump Co.; Clargie Fan Co.; Commercial Investment Trust, Inc.; Compressed Industrial Gases, Inc.; Crane Co.

C. A. Dunham Co.; Eddy Stoker Co.; Fitzgibbons Boiler Co.; Grinnell Co.; Hoffman Specialty Co.; Ilg Electric Ventilating Co.; Illinois Engineering Co.; Insulation Contractors' Association of Chicago; Johnson Service Co.; Kewanee Boiler Corp.; McDonnell & Miller; Mercoid Corp.; Minneapolis-Honeywell Regulator Co.; Modine Mfg. Co.; Murphy & Miller, Inc. (Kelvinator); Oil Burner Association Members of Chicago Master Steamfitters Association.

Barney Olson; Peoples Gas Light & Coke Co.; Powers Regulator Co.; Sampson Electric Co.; Sarco Co., Inc.; Stannard Power Equipment Co.; Steamfitter Apprentices Washburn Trade School; Stevens Root Co.; Trane Co.; Warren Webster & Co.; Weil-McLain Co.; Young Radiator Co.; Edgar T. Ward Co., Inc.

## New Room Cooler Dealer Installs One In Office

ROCKINGHAM, N. C.—Practicing what it preaches, Hallum Furniture Co., newly appointed dealer for York room coolers, has installed one of the units in its own office. The firm is also sending out 500 mailing pieces on the cooler line, and intends to follow these up with personal calls. Mr. Vick is manager of the store.

IT'S A "NATURAL" FOR MODERN AIR CONDITIONING INSTALLATIONS

**HUSSEY** Pure Lake **COPPER**

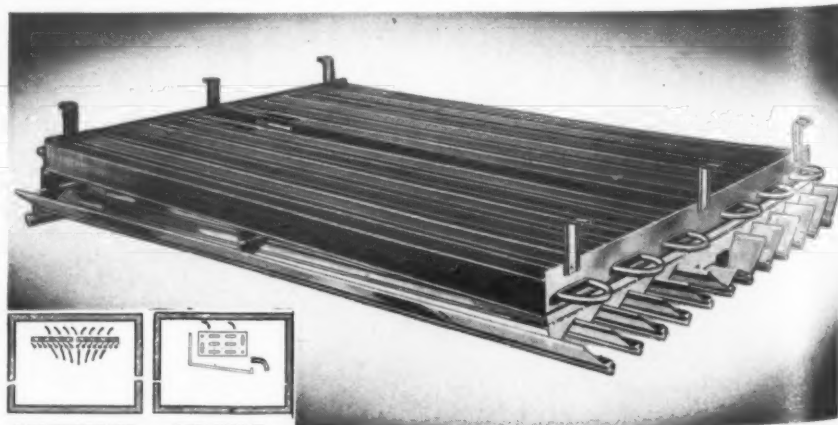
Fortified and endowed by Nature to ideally withstand the most severe corrosive conditions, Hussey Pure Lake Copper is a "natural" for Air Washers, Blowers, Coils, Ducts, Tanks, and other similar units required in modern air conditioning systems—where permanence of installation and trouble-free service are of paramount importance. That is why Hussey Pure Lake Copper enjoys

such rating among air conditioning engineers and contractors throughout the industry,—why it always pays to insist on Hussey Pure Lake Copper—the standard of quality for more than 90 years.

**C. G. HUSSEY & COMPANY**  
(Division of Copper Range Co.)  
Rolling Mills and General Offices: Pittsburgh, Pa.  
Warehouse Stocks in the Principal Cities



Copper **HUSSEY** Brass



## FLASH COOLER

HIGH HUMIDITY COIL... NO FOOD SHRINKAGE  
Cold air DESCENDS VERTICALLY from each row of coils... through individual drip pans  
RIFLING ADDS 30% TO THE EFFICIENCY... LOWER OPERATING COST  
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LONG ISLAND CITY LOS ANGELES, CALIF.



## Distributor-Dealer Doings

### Knoxville Salesmen Become 'G-Men' In Drive To Bust Notorious 'Quota Gang'

KNOXVILLE, Tenn.—The dragnet is out for appliance prospects in the spring "Man Hunt" sales drive being sponsored by the City of Knoxville Electric Department in cooperation with dealers and distributors.

Following dealer quotas have been set for the drive:

Appliance	Number Unsold Customers	Estimated Dealer Sales (3 Months)
Refrigerators	13,000	900
Ranges	22,000	800
Water Heaters	26,000	285
Stokers	Unknown	75
Attic, Furnace Fans	Unknown	65

Knoxville Electric Department will back up the campaign by preparing and distributing 27,000 bill inserts each month on the value and use of appliances, will open its show windows for dealer displays, will have a home service department member call on every purchaser of an electric range, and will conduct cooking schools and water heating talks and demonstrations for dealer salesmen.

The utility's "traveling kitchen" was remodeled, and two cooking schools per day will be held in rural territories. Both urban and rural communities will be combed by the utility's sales force, and prospects will be turned over to dealers.

Salesmen for the utility have been converted into appliance "G-Men" for the drive, and all have quotas, for which points are awarded toward a number of prize awards. Quotas and points are based on the number of sales-leads turned in. Extra points are awarded for combination appliance sales.

Girls in the home service department are also entered in the hunt for "Quincey Quota," qualifying for prizes on the basis of sales to prospects turned in for follow-up.

Industrial sales engineers will concentrate on promoting and selling ventilation and air-conditioning equipment. Quotas for these salesmen are based on the kilowatt consumption added by their sales of the new equipment.

Entire sales force of the utility is organized for the drive as a "police department." All salesmen and sales girls started out at the beginning of the campaign as "special police" and were given a small badge bearing that insignia. After a salesman has reached 30% of his quota, he is promoted to a "special officer." After reaching 60% of his quota he becomes a "deputy sheriff," and 100% promotes him to the full rank of "private detective."

Honor badges will be awarded each week to "gang busters," salesmen securing the highest percentage of their quotas. Low men will descend to the "junior G-Man" classification. Badges must be worn in the utility building at all times.

"Police Court" is held every Tuesday morning, where all records of sales and prospects are gone over with a regular legal procedure. Personnel of the court is the police commissioner, C. O. "Casual" Carpenter, general sales manager of the utility; court clerk, "Tiptoe" Tombras; water heater stooge, "Pussyfoot" Powers; residential stooge, "Weasel" Wood; dealer stooge, "Audible" Aurin; and home service stooge "Liable" Liebeck.

Total residential appliance sales for March was reported as the highest ever recorded in Knoxville. Refrigerator sales were up 35% over last year's sales, range sales increased 50%, and water heater sales 150%.

### Slip of Memory Results In Another Sale

CHESTERFIELD, S. C.—It's hard to satisfy Clyde Watson of Watson Bros., General Electric and Norge dealership here. Not content with selling four water heaters in one day, he went on to sell four refrigerators the same week.

And one of these refrigerator sales was made under rather unusual circumstances. Mr. Watson was delivering one of the refrigerators to another town in his territory when he discovered that he had neglected to bring any cord for connecting it up. So he went to the local hardware store to buy the cord, and before he came out he had sold the merchant himself a refrigerator—for cash!

### Employees Stage One-Day Drive as Surprise

FAYETTEVILLE, N. C.—Employees of Quinn & Miller Furniture Co., General Electric dealership here, recently staged the most successful one-day appliance selling campaign in the store's history as a birthday surprise for Manager M. M. Smith. Starting early and selling often, the store's personnel climaxed the activities with a steak dinner.

### Kaufmann Named Distributor Of Motor Wheel Coolers

BALTIMORE—David Kaufmann Sons, distributor for the "Duo-Therm" heater line manufactured by Motor Wheel Corp., also has taken on that company's line of "Power-Air" cooling units, starting the ball rolling with a three-carload order.

### S. I. Harvin Will Handle Westinghouse Line

MANNING, S. C.—S. I. Harvin, local automobile dealer, has been named to handle the Westinghouse line in this vicinity.

### Willson Elected Head Of Frank Wolf, Inc.

BUFFALO—William C. Willson has been elected president of Frank W. Wolf, Inc., General Electric distributor, in a reorganization following the death of Mr. Wolf. C. Stanley Coleman, formerly general manager, is executive vice president.

Other officers are: Mrs. Orpha L. Wolf, vice president and treasurer; William G. Athoe, vice president; and Maude M. Greenville, secretary.

### Sale-a-Day Average Kept In Spite of Illness

MULLINS, S. C.—Standard Electric Shop, owned and operated by L. W. Platt, and handling Stewart-Warner, Kelvinator, and Hotpoint appliances, sold an average of one major appliance a day during April, despite the fact that Mr. Platt was ill during part of the month. Even under ordinary circumstances, however, appliance selling is only a part-time job for him, because he also operates a service station.

### Lloyd Dimmig To Represent Speed Queen In East

RIPON, Wis.—Lloyd R. Dimmig, Philadelphia, has been named direct representative for Speed Queen products in eastern Pennsylvania and southern New Jersey. General Merchandise, Ltd., Toronto, has been appointed Speed Queen distributor in Quebec.

### North Louisiana Appliance Moves To Larger Quarters

RUSHTON, La.—North Louisiana Appliance Co. has moved to larger quarters in the Rainwater building on W. Alabama St. The company is Hotpoint appliance dealer, and also handles air-conditioning equipment for Air Controls, Inc., Dallas, Tex. J. L. Freeman and Joseph Taylor are co-owners.

### Simon Distributing Named To Handle Gale Coolers

BALTIMORE—Simon Distributing Corp., Baltimore-Washington distributor of Hotpoint appliances and Motorola radios, has been named distributor in the District of Columbia and certain counties of Maryland and Virginia for the Gale line of unit coolers.

Richard D. Iverson has been named sales manager of the air-conditioning division set-up to handle the new line. James H. Simon is head of the firm.

### 200 Attend Cooking School Of Covington Hardware

CLIO, S. C.—Some 200 persons attended the two-day cooking school sponsored here recently by Covington Hardware. Miss Catherine Gandy of Carolina Power & Light Co., conducted the school; Edgar Jones, district representative of Westinghouse Electric Supply, Columbia, S. C., spoke on the second day. Prizes were offered.

### Monroe Hardware Appointed Westinghouse Distributor

MONROE, La.—Monroe Hardware Co. has been appointed distributor of Westinghouse commercial refrigeration equipment in parts of Louisiana and western Mississippi.

The company also handles "Modernaire" line of air-conditioning equipment.

### 1,112 Appliances Sold On 'Axel Kahn' Day

CHICAGO — Substituting sales-action for words, salesmen from the Chicago, Indianapolis, and Rockford, Ill. offices of General Electric Supply Corp. celebrated "Axel Kahn Day" by presenting the head of the Chicago distributorship with orders for 1,112 appliances, worth \$117,104.56 at retail.

Sales made in the special one-day drive included 637 Hotpoint refrigerators, 240 ranges, 121 water heaters, 107 pieces of home laundry equipment, five dishwashers, and two pieces of commercial cooking equipment.

Executives and salesmen who participated in the drive included G. W. Becic, A. J. Lutz, Elias Gallup, R. F. Miller, L. E. Buxton, J. E. Christman, P. D. Poser, G. W. Orr, J. P. McGlinchey, N. J. Siskin, J. E. Savage, J. A. Strecker, H. N. Newbold, G. K. Olson, F. W. Stranahan, Mary Fenton, A. S. Greenberg, H. C. Cole, A. A. Auerbach, M. P. Kanker, S. E. Smith, John Fellmann, M. C. Larson, A. W. Storrs, and F. H. Johnson.

### Dauble To Manage Sidles' Appliance Division

OMAHA, Neb.—J. C. Dauble, Jr. has been appointed manager of the electrical appliance division of Sidles Co., local distributing organization. He formerly was with RCA-Victor Distributing Co. of Chicago.

### Radios, Refrigerators Lead In Carolina Sales

RALEIGH, N. C.—Radios, refrigerators, washers, ranges, and water heaters finished in that order in the race for best-selling appliances in the territory of Carolina Power & Light Co. for the first quarter of the year.

Both dealers and utility shared in the sales, but in no instance did utility sales exceed 30% of the total, any only in the case of water heaters did the percentage rise this high. Complete figures follow:

Appliance	Dealers	Utility	Total
Radios	4,520	0	4,520
Refrigerators	1,695	43	1,738
Washers	805	0	805
Ranges	581	167	748
Water heaters	211	94	305

### Clements & Ham Awarded Kelvinator Franchise

LAMAR, S. C.—J. W. Clements and H. L. Ham have been given the Kelvinator franchise for this territory. Mr. Ham runs a drug store and also serves as distributor for many products; Mr. Clements runs a garage and service station.

### Roy Stauffer Store Moves Back To Wyoming, Pa.

WYOMING, Pa.—The Roy Stauffer Appliance Store has moved from Pittston, Pa. back to Wyoming, the town where the Stauffer company first got its start.

## YOU NOW CAN SELL AIR CONDITIONING

# COOL BREEZE



## Opens Big Markets — Makes Quick Profits

- Only \$15.00 down (plus a small installation charge)
- Package Merchandise
- A Window-type unit to cool an average-size room
- Fits any window over 21 inches wide.
- Easy to demonstrate
- Easy to install
- No application engineering
- No field service
- Liberal floor plan
- Sensational Low Price



The Cool Breeze Room Cooler in a handsome, oriental walnut-finished steel case—projects only 12" from window—is only 12" high and 21" wide.

### FEATURES

1. Simply plug in—as easily installed as a radio
2. A real air conditioner at a price almost anyone can afford
3. Smart modern styling
4. Fits any window over 21 inches wide
5. May be started and stopped at the touch of a finger
6. Removes humidity from air as it cools
7. As quiet as a whisper
8. Easily located and adjusted for greatest comfort
9. Shuts out practically no window light
10. At touch of a finger, room may be ventilated

# \$150

PLUS A SMALL INSTALLATION CHARGE

## A LOW PRICE — A FINE PRODUCT — AND A GREAT NAME BACK OF IT

# AIRTEMP

DAYTON, OHIO

DIVISION OF CHRYSLER CORPORATION

AC-6  
Airtemp Division—Chrysler Corp., Dayton, Ohio

Gentlemen:—We are interested in an Airtemp franchise for the Cool Breeze Air Conditioning Unit.

Name \_\_\_\_\_

Address \_\_\_\_\_



## Commercial Refrigeration

### Temperature and Humidity Are the Vital Factors In Proper Ripening of Bananas

Exact Conditions Needed For the Various Selective Ripening Processes Described In New Booklet

NEW YORK CITY—Bananas are a perishable product. They are imported into the United States from Central America, Mexico, the West Indies, Colombia, and Ecuador. Because they require special handling and treatment from the time they are picked until they are eaten, and because the ripening process is of special importance, the Fruit Dispatch Co. has issued a special "Banana Ripening Manual" which contains much of interest to commercial refrigeration sales engineers.

Refrigeration is essential to the banana ripening process at nearly all seasons of the year and heat must be available at other times. According to the booklet, "controlling factors in banana ripening are generally recognized to be temperature, humidity, and ventilating."

Controlled humidity is necessary at all times, because "experience has shown that certain temperatures in conjunction with proper moisture and atmospheric conditions are necessary for best results."

After harvesting, bananas are shipped on ventilated or refrigerated boats to New York and New Orleans, and to other Atlantic, Gulf, and Pacific ports, where they are unloaded and shipped to interior ports by rail. Time elapsed in ocean travel is from four to 10 days and time in refrigerator cars depends on distance to the point where they are consumed.

Because of the difference in size, texture, degree of ripeness when picked, and other factors, banana shipments vary widely in their ripening characteristics. Handling bananas during the ripening process is known to be an art rather than a science and requires considerable skill. (See AIR CONDITIONING & REFRIGERATION NEWS Oct. 19, 1938, page 33.)

While experience is the best basis for judging how certain shipments of bananas should be handled, the Fruit Dispatch Co. advances certain very important and fundamental data covering the ripening process.

**"Ripening temperature"**—The most desirable temperature range for ripening lies between 62° F. and 68° F. Little, if any, harm appears to result to hard green fruit from temperatures 5 to 10° higher for a half day period or so, if very high humidity is maintained.

#### REFRIGERATION DESIRABLE

"This practice is not recommended except for refrigerated rooms which can be cooled rapidly at the proper time, without resort to ventilation. Temperatures above 66° F. are not recommended for turning or ripe fruit.

"For fast ripening, experiments have demonstrated a decided advantage in raising the temperature quite rapidly, even as much as 3° per hour until the fruit itself is warmed up to the desired ripening temperature. Heavy condensation of moisture on the fruit during the warming period appears to be beneficial and is an indication that ample moisture has been provided. For holding ripe fruit, temperatures not lower than 56° F. are recommended.

#### HUMIDITY CONTROL

"High humidity in conjunction with proper temperatures and air velocities is necessary to avoid high shrinkage from excessive dehydration of the fruit. The amount of dehydration is determined by three factors: humidity, temperature, and air velocity. For ordinary ripening temperatures a relative humidity of not less than 90 to 95% is recommended for green fruit. When fans are used for circulation, many jobbers prefer to run them at slow speed only, except when fruit is being heated or refrigerated, in

order to keep shrinkage from dehydration to a minimum."

When fruit is ripe the humidity may be reduced slightly, but not below 80%.

**"Ventilation"**—Bananas during ripening give off carbon dioxide, an inert gas, and in addition small amounts of volatile esters. Bananas ripen more evenly if no ventilation is given until fruit is fairly well colored throughout. Rooms should be kept as nearly air-tight as practicable and frequent opening of doors should be avoided."

#### TEMPERATURE CONTROL ESSENTIAL

Fast ripening (three to four days) of normal fruit may be accomplished by bringing pulp temperatures of the green bananas up to 70° F. for 24 hours and then reducing the temperature to 68° until they are colored—then hold at 66° F. The Fruit Dispatch Co. booklet says that "for best results accurate and steady control of temperature is essential."

Humidity during this period should be held at 90% until fruit is colored and may then be reduced to 80%. No ventilation is used until fruit is properly colored and should then be held down to three to four changes of air per hour.

#### ETHYLENE GAS

One or two applications of ethylene gas may be used at the rate of 1-cu. ft. of gas per 1,000 cu. ft. of space.

#### MEDIUM RIPENING (5 TO 7 DAYS)

Fruit should be cooled or warmed to 64° F. Humidity and ventilation provisions are the same as for fast ripening. Ethylene gas seldom required.

#### SLOW RIPENING (9 TO 10 DAYS)

Fruit should be held at 62° F. and should not remain at high temperatures even for a few hours. Humidity should be kept high and ventilation used (three to four changes per hour) if this is possible without reducing humidity. Ethylene gas is not required.

#### HOLDING RIPE FRUIT

For holding ripe fruit, temperatures of between 56° F. and 60° F. are recommended. Humidity should range from 75% to 85%, with moderate ventilation.

### Change In Showcase Lighting Foreseen By Lamp Experts

BLOOMFIELD, N. J.—There are 100,000 miles of showcases in American stores that need fluorescent lighting. O. P. Cleaver of Westinghouse Lamp Division's commercial engineering department told 200 lamp jobbers at their annual conference here.

The conference climaxed a six months' contest in which the company awarded prizes to wholesalers in six districts who obtained the greatest amount of lamp business, and to each leading jobber salesman. Approximately a million dollars' worth of new lamp business was obtained in the drive.

Mr. Cleaver termed 1938 the most productive year in all history, so far as new lamp developments are concerned, with fluorescent lighting the most important development.

Dr. H. C. Rentschler, director of the Westinghouse lamp research laboratories, predicted some surprising improvements, particularly in fluorescent and vapor lamps. The present incandescent lamp still is only one tenth as efficient as the physicists' practical ideal, he declared.

Second day of the conference was spent in touring the World's Fair.

#### General Refrigeration Co. Names 5 Distributors

BELOIT, Wis.—Five new distributors for Lipman refrigeration equipment have been appointed by General Refrigeration Corp. They are: W. H. Baughn Fixture Co., El Paso, Tex.; Peery Electric Shop, Trenton, Mo.; East Side Sales & Service Co., East St. Louis, Ill.; Charlotte Salvage Co., Charlotte, N. C.; Corvett's Refrigeration Service Co., Charleston, S. C.

### Figures Presented on Growth & Change In Frozen Foods Trade

NEW YORK CITY—Quick-frozen foods business of the country amounted to about 200,000,000 lbs. in 1938, as compared with 30,000,000 lbs. in 1934, Edwin T. Gibson, president of Frosted Foods Sales Corp., estimated in a talk before the American Marketing Association's luncheon here May 25.

Some estimates have placed the volume at half a billion pounds annually, but Mr. Gibson said he regarded this as much too high. Estimates have been difficult and varied, he explained, because of the different methods of freezing food which might be included. His own estimate, he said, related only to quick-frozen products.

Mr. Gibson explained that while Birds Eye quick-frozen foods were introduced 10 years ago, it was not until the last four or five years that they passed finally from the research and experimental stage. Ten years ago the company had four packing plants and 12 dealers; today the company operates 29 packing plants and sells through 4,950 retail dealers, and distributes nationally to institutions such as hotels, railroads, and restaurants.

Present dealer organization represents an increase of 891 since the end of 1938 and of 2,150 since the end of 1937. Plans have been completed for retail marketing expansion this year in the South, Southwest, and Far West, he said, so that within a year, retail distribution will be reached in most of the larger centers of the country.

"The low-temperature refrigerated box from which the quick-frozen products are sold in retail stores has been reduced in price from \$1,800 and \$1,200 in the early days of the industry, to \$300 at the present time, a reduction which has removed one of the early obstacles to the more extended merchandising of the products," stated Mr. Gibson.

Quick freezing, Mr. Gibson said, is nothing more nor less than food preservation. It does not make food any better. It simply preserves it as it is. General Foods Corp., which acquired the Birdseye process, quickly found that in creating a new business there were many problems in addition to the freezing of the product.

Very few low-temperature storage rooms were in existence in the country, few railroad cars or trucks were refrigerated for low temperatures, and stores had no low-temperature equipment.

Instead of buying crops, the company has contracted for acreage on which crops could be raised from seed to harvest according to the company's own specifications. To get an average break on the weather, which in one locality might cause either bumper or short crops, the acreage used by the company is scattered over the country. Crops must be planned from a year to 18 months ahead of marketing, he added.

Among various introductory problems he mentioned the existence of a strong prejudice by consumers against preservation by freezing, due partly to the happy connotation of the word "fresh" in connection with foods, and partly to experience with frozen products, including those left on the back porch in winter, which were ruined when they thawed.

### Gay Engineering Shows Fish-Freezing Film

LOS ANGELES—Big game fishing and fish freezing occupied the attention of Los Angeles A.S.R.E. members at their final meeting of the spring season May 31 in the George Belsey Co. hall.

Technical treat of the meeting was a showing of Gay Engineering Corp.'s new film on modern fish freezing and holding as applied to fishing boats by the company, together with a description of the Pak-Ice equipment, eutectic ice, and brine circulation on board the boats.

Ralph Manns of Gay Engineering Corp. presented additional information on the company's fish freezing equipment and its uses, and answered questions by the engineers present.

## No. 450 REFRIGERATION CONTROLS—

every element easily accessible



THE Detroit No. 450 Refrigeration Controls offer the maximum in accessibility and flexibility. A few turns of the knurled knob on the front of the cover plate releases that plate to expose the entire inner assembly of the control. And this retaining screw will not fall out—cannot get lost—it's fastened.

**Power Elements Interchangeable**—The pressure element at the bottom of the control can be removed by backing out four retaining screws. It may be replaced without disturbing any other part of the control. It is equally as simple to exchange the pressure element for a temperature element.

**Snap Switch Removable**—The moisture proof snap switch can readily be lifted off by releasing one screw. Its mounting is designed to prevent improper replacement.

**High Pressure Cut-Out Replaceable**—The high pressure cut-out device is dismounted by the removal of one screw and the loosening of a second. The use of No. 450 Controls, because of their accessibility and flexibility, will save you a great deal of time and trouble on both installation and servicing work.

Write for descriptive bulletins.

Take Advantage of Your Jobber's Cooperation

The new Detroit Air Filter is the former Arco Filter with added improvements.

**DETROIT LUBRICATOR COMPANY**

General Offices: DETROIT, MICHIGAN

Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg



# Air Conditioning

## Indianapolis Air-Conditioning Association Puzzles Over Whom It Should Admit

(Concluded from Page 1, Column 2)  
fessional engineers. (2) Supplies and installation sub-contractors shall consist of only those whose equipment may be adjusted or regulated in a manner which directly affects the conditioned space.

Mr. Cotton pointed out that this interpretation was not an effort to change the existing rules, but to clarify the membership qualification issue under those rules. He explained that under this interpretation piping contractors do not "adjust" pipe, electrical contractors do not "adjust" wiring, and insulation contractors do not "adjust" insulation; hence the conditioned space is not affected, and these trades would not be admissible to membership.

### WELL DRILLERS?

The interpretation would, however, cover suppliers of expansion valves or volume dampers, and other controls. Question arose as to the status of well drillers as potential members. Mr. Cotton asserted that, under the interpretation, well drillers had to accept the volume of water as it came from the ground, and could not "adjust" the well to affect the conditioned space; therefore they would not qualify as members.

At this point Mr. Cotton requested that the membership committee be instructed by the council as to how it should proceed in further interpretation of the membership rules. After general discussion, it was decided that the matter of changing membership qualifications be tabled until the Council had an opportunity to give the matter further study and to examine the membership provisions of other air-conditioning associations and councils throughout the country.

### WORKING ON CODE

E. S. Hildreth reported that the proposed air-conditioning code for the city of Indianapolis was being drawn by Prof. George Rottman of Purdue university, and that a report would be made as to the progress of this code at an early date.

Plans were instigated at the meet-

ing for a "recreational meeting" to be held in July or August at some park near Indianapolis. Membership application of the R. M. Cotton Co. was approved by the council.

Henry Knowlton, secretary of the temporary national council, related events leading to a preliminary meeting of men interested in the national association movement in Detroit last fall, and explained the basis on which the council was established during the First All-Industry Refrigeration and Air Conditioning Exhibition in January of this year.

### NATIONAL GROUP EXPLAINED

"To be successful, a national association must represent the thinking of the entire air-conditioning industry," Mr. Knowlton said, "and for this reason chairman John H. Keller of the national council has been interested in having local associations recommend the most outstanding men in their group for membership on the council.

"Regional meetings will be held throughout the balance of this year, to give every opportunity for men interested in the association movement to express their views.

"Proceedings of these meetings and meetings of local associations will be recorded in the bulletin of the association and mailed without charge to everyone in the industry who is interested."

Mr. Knowlton emphasized the value of having a central point for clearing information concerning industry problems. He pointed out that work done in connection with the refrigeration code of the city of Detroit by the Air Conditioning Association of Michigan should prove a valuable background for obtaining a satisfactory code in Indianapolis.

### CLEVELAND ACCOMPLISHMENTS

The speaker related how the Air Conditioning Association of Cleveland, Inc. has worked out design standards for air conditioning over a period of time, how the Pittsburgh group has worked out a system of exchanging engineering information in competitive bidding, and how Fort Worth, Tex. has handled problems of fair trade practice.

Mr. Knowlton reported the efforts of the Air Conditioning Association of Washington, D. C. to arrive at a satisfactory basis for the guarantee and servicing of equipment, and how a 90-day guarantee had been adopted.

### BASIC ELEMENTS

"Air conditioning has a number of basic elements which will serve as the foundation for strong promotional campaigns," he said. "One of these is the 'profit story' to the commercial user; another is the 'health story' to the home and office. Too often these basic selling points are forgotten in the sale of equipment.

"It would be possible to start the promotional money which is now being spent by manufacturers, utilities, and individual firms in a single direction, for a single purpose, without increasing the present budgets," Mr. Knowlton said.

"The public is capable of absorbing only one idea at a time. For this reason, promotion should be directed toward a single point for one year, and then the spotlight should be turned on another basic selling theme for another year. The cumulative effect of this promotion will help give air conditioning the public acceptance that is needed at the present time."

### MEMBERSHIP

Following the talk, Mr. Knowlton answered questions concerning the activities of local associations, matters relating to codes, and other problems which bear on the air-conditioning industry.

Present at the meeting were J. S. Milligan, J. S. Milligan Co. (Air-temp); E. S. Hildreth, Indianapolis

Power & Light Co.; Hugh Alexander, Johnson Service Co.; G. B. Supple, American Blower Co.; S. A. Horine, Central Supply Co.; R. K. Duncan, Duncan Supply Co.; I. W. Cotton, I. W. Cotton Co.; George Jackson, Jackson Engineering Co.; W. P. Whittington, W. P. Whittington & Co.; W. W. Grear, Freyn Bros., Inc.; E. R. Ross, Bevington & Williams, Inc.; J. L. Hardin, Roland M. Cotton & Co.; G. A. Post, F. H. Langsenkamp Co.; C. J. Carlson; George Joslin, Tanner & Co.; N. G. Wade, General Engineering Co.; Walter Rothchild, T. A. Mulrey & Co.

### INDIANAPOLIS MEMBERS

Other members of the Indianapolis Council include F. B. Helvey, Air Controls, Inc.; E. G. Peabody, Citizens Gas & Coke Co.; V. C. Snowberger, Clarage Fan Co.; J. R. Colby, Colby Equipment Co.; W. J. Freije, Hayes Bros., Inc. (president of the Council); George Heidenreich; George R. Popp, Jr., building commissioner, city of Indianapolis; Homer Rupard, Indianapolis Water Co.; T. H. Endicott, Indiana Refrigeration and Air Conditioning Co., Inc.

A. F. Krauss, Charles Krauss & Sons; A. F. Habener, Minneapolis-Honeywell Co.; M. D. Mullane; R. A. Scholl, Northern Indiana Power Co.; Ben Cones, Powers Regulator Co.; Mr. Schlesinger, Public Service Co. of Indiana; Prof. W. T. Miller, department of mechanical engineering, Purdue university; Ray Von Spreckleson, Refrigeration Equipment Corp.; Otto C. Ross, Ross Power Equipment Co.; R. H. Edwards, Sink & Edwards; A. G. Mutimer, B. F. Sturtevant Co.; P. T. McGeary, Trane Co.; and Ben Paller, Westerlin & Campbell Co.

## Warm Air Heating Group & FHA Planning Standard Code For FHA-Approved Homes

CHICAGO—The National Warm Air Heating & Air Conditioning Association is cooperating with the Federal Housing Administration in the preparation of a standard code covering heating and air-conditioning equipment for homes covered by FHA loans, for FHA inspectors, members of the organization were informed at the mid-year meeting last week in Hotel Stevens.

Emphasis throughout the program was upon improvement in methods and the development of higher standards in design, manufacture, and installation of heating and air-conditioning equipment for better service and protection to the public. More than 350 persons attended the three-day sessions.

Perl S. Miller of Columbus, Ohio reported on "The Elimination of Waste in Our Industry Through Standardization," and B. F. McLouth of Lansing, Mich. spoke on "Our Installation Codes and Matters Pertaining to the Same."

A review of the market situation in the heating and air-conditioning field was presented by K. C. Richmond, editor of Coal Heat magazine.

"The American public is getting comfort-minded at last," he said. "The public for years drolled up the bathroom, prettified the living rooms, and neglected the basement. Now they are waking up."

"Unfortunately, the speculative builder, in playing up to this new interest, in many cases is cutting

corners and gypping new homeowners through the installation of second-rate heating or so-called winter air-conditioning equipment. Not only are such men short-circuiting the channels of trade, but they are also jeopardizing the good name of manufacturers of heating equipment."

Prof. A. P. Kratz and S. Konzo of the University of Illinois' engineering experiment station reported on the year's activity at the "research residence" at Urbana, Ill., featuring an investigation of stoker operation in connection with a forced warm air heating system.

Research has established that stoker operation is practical and economical with forced warm air heating, Prof. Kratz said.

Prof. Lorin G. Miller of Michigan State College reported on his studies of problems of rating and baffling forced warm air furnaces, aimed at clearing the ground for development of codes and standards for consumers' protection.

Other papers included "Don't Oversell Clean Air Delivery," by Jan S. Irvine of Toledo; "Cooling With Air Movement," by B. G. Krause of Cleveland; "Air Filtration in Connection with House Dust, Hay Fever, and Pollen Asthma Allergy," by Dr. William H. Welker of the University of Illinois college of medicine; "Two-Speed Blower Operation," by H. F. Curtis of Cleveland; "How Best to Help the Dealer Sell," by William Cook of Des Moines, Iowa.

# BUSINESS OPPORTUNITY

**WANTED: DEALERS and DISTRIBUTORS to Sell GR-LIPMAN "PACKAGED" AIR CONDITIONING**

A fast-ripening market awaits those who wish to reap their share of the tidy profit that "Packaged" Air Conditioning represents. And a GR-LIPMAN sales franchise awaits those who can qualify as dealers and distributors . . . to represent this exceptional line.

Proper cooling and de-humidification of hot, sultry indoor air is vital to the successful operation of any air conditioning unit . . . and operating dependability is vital to customer satisfaction. GR-LIPMAN design, construction, exclusive features, and broad experience in the commercial refrigeration and air conditioning fields qualify this equipment and this concern for the best type of sales representation. We invite YOU to present your qualifications as a dealer or distributor who can do a real job for yourself and for us.

If interested . . . mail the coupon today.

**GENERAL REFRIGERATION CORPORATION**  
DEPT. AC-639  
BELOIT, WIS., U. S. A.

**GR-LIPMAN ROOM CONDITIONER . . .** a beautiful piece of walnut furniture and an exceptionally efficient, dependable air conditioning unit for private homes, offices, hotel guest rooms, etc. Supplied in 2 sizes. Cools, dehumidifies, filters and freshens hot, sultry indoor air.

**GR-LIPMAN STORE CONDITIONER** A complete, self-contained, portable unit employing service-tested, Lipman-engineered refrigeration and dehumidifying system and advanced type of air filtration and distribution. Three models . . . 2, 3 and 5 H. P. Freon-12 refrigerant. Easily installed. All parts accessible for servicing from front of unit.

**GR-LIPMAN WINDOW VENTILATOR** Provides clean, draftless ventilation . . . a boon to hay-fever sufferers. Ideal for home, hospital, hotel, and office service.



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**GENERAL REFRIGERATION CORPORATION:**  
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Without obligation, send details.

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ADDRESS \_\_\_\_\_

**Dayton V-BELTS**  
Silent, vibrationless, dependable, long-lasting. Powerful grip prevents slippage. A nearby distributor carries a complete stock for appliances and machines.  
**THE DAYTON RUBBER MFG. CO., DAYTON, OHIO**  
World's Largest Manufacturer of V-Belts

**BLOWER WHEELS**  
**"HAVE CLARAGE MAKE THEM!"**  
Every year we ship to builders of air conditioning units thousands upon thousands of Clarage Blower Wheels and Assemblies.  
This smaller equipment is designed with the same skill characteristic of the larger Clarage apparatus—just as carefully fabricated and tested.  
And we have sizes to meet ALL REQUIREMENTS—with slow speed operation insuring SILENT PERFORMANCE.  
May we have your next inquiry?  
**CLARAGE FAN COMPANY**  
KALAMAZOO, MICHIGAN  
Sales Offices in All Principal Cities

**Nationally Advertised**  
This group of carefully selected trade magazines, reaching the great majority of hotel and restaurant operators, chain stores, independent grocers, meat merchants, and large institutions throughout the country carry dominant advertising featuring GR-LIPMAN self-contained air conditioning units and refrigerating machines. Live "leads" are referred to GR-LIPMAN distributors and dealers.

Magazines shown: CHAIN STORE AGE, MEAT, INSTITUTIONS, HOTEL MANAGEMENT, RESTAURANT, PROCESSING.



# Air Conditioning

## Successful Air-Conditioning Installations Require Careful & Complete Estimates

**Service Man Must Use Horse Sense, But Don't Neglect To Give Him All the Information Possible**

By A. F. Avera, Air-Con Engineering Corp., Waco, Tex.\*

THE subject of air-conditioning installations of less than 50 tons capacity was selected because the major portion of this type work is being done by distributors or dealers representing the different manufacturers in local or franchised territories. These dealers or distributors are supported and assisted more or less in sales and engineering by factory-maintained representatives.

The dealer, however, must be in position to completely execute a contract from the first call on the prospect through the survey, layout, estimate, preparation and presentation of proposal, closing the sale, making the installation, and collecting the money.

This means that the dealer must employ a man for each of these operations, or a man or men capable of several of them. Most dealer franchises will not justify the segregation of these duties as that would require a personnel too large to be supported by the volume available. The result in many cases is a force consisting of one or more salesmen, and one installation and service man.

The salesman must necessarily be capable of surveying, laying out, estimating, and selling the job and often supervising the installation. It is needless to say that it would be impossible for the factory engineer to assist in every case.

\*Text of the talk by the author, "Installation and Servicing of Air Conditioning Equipment of Less Than 50 Tons," given before the University of Texas Third Conference on Air Conditioning held recently.

Prospects develop quickly and as people have been trained to expect almost instant service, they naturally assume that this can be given on an air-conditioning proposal. This results in a representative quickly surveying the premises, making a layout, etc., without carefully diagnosing the situation as to demand, location of machinery, ducts, etc., and finally the cost estimate.

The estimate is made, the markup added, and the sale consummated. From then on it is up to the installation man to install the job to the customer's entire satisfaction, and service it through the guarantee period at the estimated cost in order for the dealer to make the profit anticipated.

### ADDITIONAL COSTS

Salesmen or even sales engineers are not carpenters, painters, plasterers, or brick layers. There is quite often an operation involved in even a small job which requires the service of all these craftsmen, and on which the sales engineer must estimate the cost. This can be done more accurately by consulting the installation man or erection superintendent and having him advise on labor and material required.

Cost estimates should also be broken into a sufficient number of items to permit the bookkeeper to intelligently charge up job costs and to determine at the completion of the job which items were incorrectly estimated.

Salesmen will often lump together

**Table 1—Incomplete Estimate Sheet**

Name: John Doe

Date: 4/14/39

Equipment	Cost
Compressor .....	
Air-Conditioning Unit .....	
Cooling Tower .....	
Pump .....	
Ductwork .....	
Labor to Install .....	
Wiring .....	
Freight .....	

several items such as labor, expense, foundations, cutting and patching, and sometimes piping and cork covering, into one figure which he has more or less pulled from thin air.

The erection engineer is the goat. If these items are listed and estimated separately, a more accurate total cost estimate can be obtained.

An estimate which is typical of many that have actually resulted in sales is shown in Table 1.

On this estimate are eight items—now, on an estimate which a cost accountant can fathom we find the items as shown in Table 2.

The labor and expense item can be broken down on a separate sheet and entered on the estimate as one item.

This estimate contains 25 items and will not only be a help to the bookkeeper but to the erection engineer as well. At the completion of

**Table 2—Complete Estimate Sheet**

Name: John Doe

Date: 4/14/39

Equipment	Cost
Compressor—Speed, Motor Horsepower and Current Characteristics .....	
Air-Conditioning Unit—Row Coils, Fan Speed, Horsepower, Current Characteristics .....	
Filter Section .....	
Expansion Valves .....	
Fan Starter .....	
Room Thermostat or Other Controls .....	
Compressor Foundation .....	
Unit Hangers or Supports .....	
Cooling Tower—G.p.m., Size, Etc. ....	
Cooling Tower Foundation .....	
Condenser Water Pump—Size, Capacity, Horsepower, Current Characteristics .....	
Pump Starter .....	
Refrigerant Piping .....	
Cork Covering .....	
Ductwork .....	
Duct Insulation .....	
Grilles and Outlets .....	
Painting Ducts If Any .....	
Cutting and Patching .....	
"Freon" Charge .....	
Labor and Expenses .....	
Rigging .....	
Water and Drain Lines .....	
Electric Wiring .....	
Freight and Drayage .....	
Total .....	

### SPACE IS LIMITED

The space available for the location of equipment is in nearly every case limited. We have to use kitchens, dressing rooms, mezzanine floors, and sometimes build houses on the roof to locate equipment. For this reason structural supports and foundations should be given careful consideration.

Compressors and fans are being designed for higher and higher speeds. This makes it important that proper isolation measures be taken to reduce noise and vibration.

Evaporative condensers and cooling towers should be carefully located. Location of outside air ducts can cause plenty of trouble on such installations as restaurants, beauty parlors, drug stores, etc.

With reference to service calls, they originate from many sources. The most of them are trivial and require a minor adjustment. Most of the purchasers of small air-conditioning jobs are totally unfamiliar with the mechanical operation of the equipment. At the slightest indication of trouble they call the office and say in no uncertain terms to send a service man now.

### SOME CALLS IMPORTANT

As above stated these calls are mostly minor adjustments. However, occasionally a service call originates from a source of trouble which is important and involves the expenditure of time and money to remove. When this is the case the source should be ascertained and the necessary action taken to eliminate it.

A service man should go on a job sincerely interested in eliminating all the causes of trouble as soon as possible in order that the service reserve should not be used up or the customer caused to spend money needlessly. If this service man is properly informed and will use a reasonable amount of horse sense this can be done.

An air-conditioning job certainly cannot work when the filters are so completely stopped up that the fan is not delivering 25% of the required air. Yet, service men have been known to spend two or three hours checking over everything else about the job before it suddenly dawns on them to see if the filters were stopped up. This sounds strange but it is true.

### WHAT SHOULD BE DONE

When a compressor cuts out from high head pressure the average service man will immediately adjust the high pressure cut-out upward so the compressor will run. He will then either come back to the office and sit down or go out on another job knowing that sooner or later and more often sooner he will get another call from the same job.

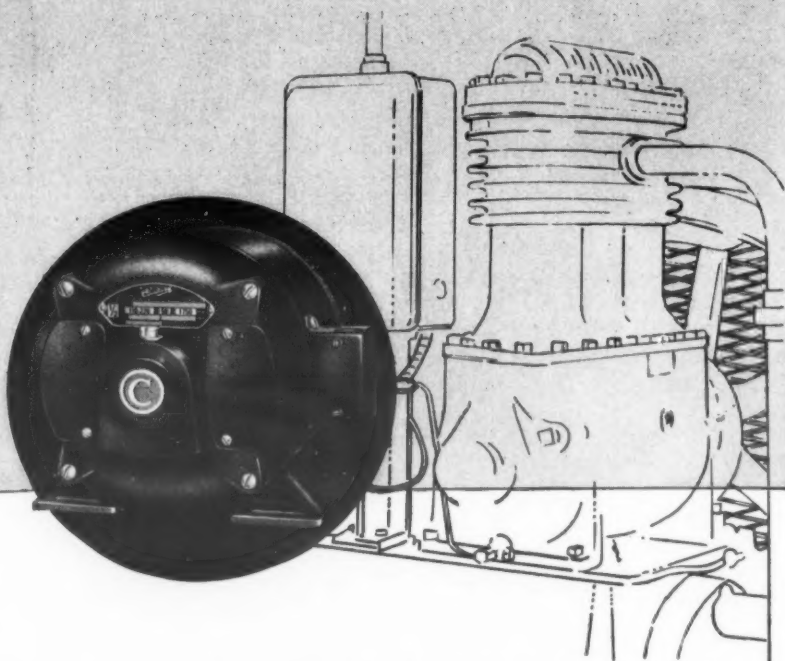
Strainers, condensers, pumps, etc., will not clean themselves. They have to be cleaned and the quicker it is done the more money will be saved.

Volumes can be written on this subject of air conditioning but, after all, air-conditioning contractors are in the business to make money, which few of them are doing. And in conclusion the first essential to making money is to know the cost of an installation and to know the overhead or operating cost percentage; the next to add a sufficient amount of profit to a cost estimate to enable the installation to be made, completed, adjusted, and collected for and show the desired percentage of net profit.

## THEY START—WITH LESS STARTING CURRENT

**TYPE RS  
SINGLE PHASE MOTORS**

**HIGHEST STARTING  
EFFICIENCY . . .  
STARTING TORQUE PER  
AMPERE OF ANY TYPE  
OF SINGLE PHASE MOTOR**



No other type of single phase motor manufactured can compare with the high starting efficiency of the Repulsion Start Induction Single Phase Motor.

By starting efficiency we mean starting torque per ampere of starting current necessary to give 400 per cent of full load torque, or more.

With this type of single phase motor, there is the least voltage drop at starting on long or heavily loaded lines, hence better voltage at the motor terminals and the least light flicker.

For room coolers and central plants—they match all the requirements of the installation and surroundings.

Fuses which will protect this Century motor while running and carrying its load are usually of ample capacity for starting.

In Century Repulsion Start Induction Single Phase Motors you get a motor that has behind it 35 years of proven ability to handle modern refrigeration compressors and other hard to start loads successfully, even where automatic control is necessary.

Specify Century Type RS motors—that are known everywhere—on your next refrigeration Drive.

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ONE OF THE LARGEST EXCLUSIVE MOTOR MANUFACTURERS IN THE WORLD

the job a ready comparison can be made and incorrect estimating disclosed.

Here are two load calculations on actual jobs, both, it is noted are approximately 30 tons.

The first an office building and sales space.

Cubical content 107,114, 40 people, 35,000 watts lights, 2,100 c.f.m. outside air, 274,570 room sensible heat, 18,890 room latent heat, 293,460 room total heat, 369,750 grand total heat, .94 sensible heat factor, 58° apparatus dewpoint, 48° suction temperature. Air required with 17.6° dehumidifier rise 14,400 c.f.m.

### CALCULATIONS FOR THEATER

The second a theater.  
Cubical content 65,000, 500 people, no lights, 2,500 c.f.m. outside air, 176,066 room sensible, 108,000 room latent heat, 284,066 room total, 367,316 grand total heat, .62 sensible heat factor, 44° apparatus dewpoint, 35° suction temperature. Air required 5,660 c.f.m. at 28.8 dehumidifier rise.

These two jobs are based on 100° dry bulb, 78° wet bulb, and 38% relative humidity outside with 80° dry bulb, 67° wet bulb, and 51% relative humidity inside.

Assume that these two jobs were both installed by the same dealer and some trouble other than mechanical was experienced. Before this trouble could be located it would be necessary for the service man to have a knowledge of the working conditions of the job before it could intelligently be done.

### NEED ALL INFORMATION

Installation and service men are only human and in many cases have not had too much experience in air conditioning so they should be given all information, and assisted as much as possible on each job.

Air-conditioning equipment manufactured by standard manufacturers is rarely to be found defective and is usually of the full capacity claimed. If jobs are properly designed, if the installation man is sufficiently advised on each job and equipped with the necessary implements to install the job right, little trouble will result. Refrigerant piping should be sized



## Specialty Selling Ideas

### Dealer Splits Profits on Trade-Ins With Salesmen, But They Have To Share Loss

By Robert Price

DAVENPORT, Iowa—Share the profit—and share the loss. That is the working agreement between Harry Jacobs, owner of the Harry Jacobs Maytag Store, Stewart-Warner dealer, and his salesmen.

Not only do they share the profit on sales of new refrigerators, but they also split the profit—or the loss—on trade-ins.

On the sale of new units, this dealer adds 5% to his invoice price, and above this the salesman selling the box, and the dealer, divide the over-all profit on the sale.

#### HOW PLAN WORKS

When a trade-in is accepted, the cost of labor and parts needed to recondition the box is added to the buying price. When the trade-in is sold, the cost of reconditioning, plus an additional sum to cover a one-year guarantee is deducted from the sale price. The salesman selling the box then receives half of this remaining amount.

Or there is an alternate plan. If the salesman appraises a trade-in for a certain amount and then does not wish to sell the box himself, the store will "buy" the box from him at

a reduction from the appraisal price. If a profit is made on the resale of the refrigerator, the salesman cuts himself in for one-half of the profit on the deal. If there is a loss, the salesman assumes half of this loss.

If a second salesman sells the trade-in, however, after the first salesman has "sold" the box to the dealer, he receives one-half of the profit after all expenses have been deducted.

This plan of splitting the profits among the salesman is working, because very few losses are recorded on the turnover of used boxes. The salesman considers the box as his chance for profit, and his appraisals and resale prices are governed by his desire to realize this profit on every resale.

#### BENEFITS OF SCHEME

And Mr. Jacobs' profit on the trades is sure to be protected by the policy of his sales force, for he receives half the profit, they, half of the loss. Keeping the two in balance is one way, he says, to keep your salesmen "on the careful watch" for profitable trades, and assure salesman and dealer of an "extra" income.

### Sales Spurt as 'Laggards' Are Called Just That On Public Chart

KANSAS CITY, Mo.—By posting the progress of its salesmen on a chart that anyone can read, Jones Department Store, Frigidaire dealer here, has produced plenty of red faces for laggards but sales are jumped as embarrassed salesmen battle to improve their "public" standing.

The chart has tag names for each man, according to his sales rating. Highest producers are dubbed "Top-notchers," "Runners-up," and "In the money," while in-betweeners carry such titles as "Could do better," "Fighting—but not too hard," and "Halfway good."

Low men are prodded to better effort by names like "Losing interest?," "Something wrong," "Lost your punch," "Not so hot," "Just lazy," "No comment," "Fighting—for last place," while last-placer is meaningfully tagged, "Scratching bottom."

### Free Parts & Service Aid Sales of Appliances

DES MOINES, Iowa—Free parts and service on small repair jobs has meant repeat appliance sales for Modern Appliance Co., Kelvinator dealer here.

Recently the service department received a call to replace a worn gasket on a washer. The work was done free. The housewife was so surprised and delighted that she sent her husband to the store to thank them and say, "anything that we need in the appliance line will be purchased at your store."

Quick-like, a salesman dashed out to the service customer's home—and came back with an order for a refrigerator and a new washer.

### Houston Neighborhood Stores Find Night Sales Easier

HOUSTON, Tex.—Sales history is made at night. Many appliance stores here keep their doors open evenings on the theory that the housewife and friend husband shop together, making for a higher percentage of quick sales.

Most of these stores are in neighborhood districts of the city, providing ample parking room for the nocturnal shoppers. Store owners report that the cooler evenings bring a heavy traffic, and when prospects are nabbed in their leisure hours—selling is easy and pleasant.

### Make Youngsters Help Sell the Parents, Dealer Advises

SPRINGFIELD, Mo.—Work on the youngsters between 10 and 20 if you want to sell appliances to the family, says Mrs. George Baldwin of Frigidaire Electric Co. here.

Properly influenced, these youngsters are persistent "salesmen" for her, she finds. Sales-builder for her has been a three-point procedure:

1. Explain the use of refrigeration in the home to junior and senior high school home economics classes. Don't talk down to them—treat them as your equal in intelligence.

2. When domestic science or general science classes call at the store for a group demonstration, give them as thorough a sales presentation as you would an adult prospect.

3. Invite youngsters to accompany their parents to select group demonstrations at the store, where a dinner is prepared and served by salesmen. Groups of from eight to 15 persons are best for this type of promotion. Plan the menu to please the man of the house—but see that all the food can be enjoyed by the children, too.

### Electricity Even Dries Towels In Chicago Model Home

CHICAGO—A kitchen in which electricity does everything from keeping and cooking the food to drying the towels is an outstanding feature of the latest all-electric demonstration home opened here by Commonwealth Edison Co.

Although designed for demonstration purposes, and not to be lived in, the home is equipped with complete year-around air conditioning. "Plug-in-strip," affording an electric outlet every 6 inches along the wall, is installed extensively throughout the house.

### Utility Employees Paid For Leads on Roaster Sales

CHICAGO—Minimum commission of \$1.50 is being offered by Commonwealth Edison Co. (for a limited time) to employees turning in leads resulting in the sale of electric roasters.

In most cases, this amount is considerably higher than the commission which would be paid under the company's regular "sales lead" system, but in cases where the regular commission would exceed \$1.50, the higher amount will be paid.

## Home Economists Meet the Author of 'Mrs. Cinderella'



Left: Emma Maurice Tighe, Boston Edison Co. home economist, and Lou Miller, manager of merchandising services for General Electric appliances, chat during a recess at G-E's eighth annual home service conference in the Institute at Nela Park. Right: Janet Cope, 14-year-old author of the "Mrs. Cinderella" booklet which G-E is using as the basis of a children's poem contest to boost dealer floor traffic, hands out copies of the booklet to Institute guests. Peeking around the corner is Fred Cuffe, range engineer.

### Home Economists Meet At G-E Conference

CLEVELAND—How they might promote the "Mrs. Cinderella" contest at home service meetings was explained to 57 home economists representing utilities and distributors from all parts of the country at General Electric's eighth annual home service conference May 26 in the Institute at Nela Park.

Edwina Nolan, G-E home service director, was in charge of the meeting, and attendants were welcomed by L. H. Miller, manager of merchandising services for the specialty appliance department.

In addition to the "Mrs. Cinderella" presentation, made by Janet Cope, 14-year-old author of the booklet and Jean De Jen, the home service workers also heard talks on refrigeration, by A. M. Sweeney; ranges and water heaters, by J. R. Poteat and F. W. Cuffe; the electric sink, by G. E. Drollinger; kitchen storage appli-

ances, by C. W. Theelen; advertising and promotion helps, by A. L. Scaife; laundry equipment, by Mrs. Ruby Littlefield; and small appliances, by Louise Leslie.

### Sales Gain 40% In May

LINCOLN, Neb.—A 40% gain in Frigidaire sales in the Nebraska territory during May over the corresponding month a year ago is reported by J. R. O'Neal, state sales manager.

**AND REMEMBER ONE MORE THING,  
YOUNG MAN: EARLY IN EVERY TALK,  
YOU POINT OUT THE DULUX FINISH!**

"THAT'S standing orders for all the salesmen on my payroll. We can't afford to overlook any bets that may close a sale quicker.

"And DULUX is one of the best little sales-clinchers there is. It's the finish women have dreamed of for years. It's a white finish that stays white with minimum effort of cleaning. It is resistant to the hard wear of daily service—chipping, cracking and grease. It's the finish with every

quality women want . . . and I want you to tell 'em about it, every time.

"Just remember, son, that 80% of all refrigerator manufacturers use DULUX. There's a good reason for that . . . and I want you to be sure your prospects know it! I know that DULUX helps sell refrigerators faster."

Feature DULUX in your selling! IT PAYS! E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

**DULUX**
  
 REG. U. S. PAT. OFF.
   
*The Modern Refrigerator Finish*



## AIR CONDITIONING & REFRIGERATION NEWS

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## It's a Great Business

NEWSPAPERS are sometimes chided for publishing so many stories of misery, unhappiness, bad luck, and malice. "The world isn't as bad as it is painted," point out these critics. "How about all the happy homes, all the honest men, all the successful business enterprises, all the contented workmen?"

True, indeed, answer newspapermen—but these things are the rule, not the exception—and it's the exceptions that make news.

### Troubles of Dealers Sometimes Obscure Their Successes

By the same token, one might ask of a business paper why so much "bad" news is printed. In the electrical appliance field, for example, one hears and reads much about faulty installations, service troubles, engineering arguments, price-cutting, discount buying, chiseling, mail-order competition, too many dealers, profitless business, dealer dissatisfaction, and wholesale grumbling.

That such news is not to be taken as an indication that the whole shebang is going to pot is, of course, recognized by anyone familiar with the industry. It has been, is, and is going to be, a great business. One need only look at the "success stories" reported in the News this spring by our on-the-spot traveling editors to realize that a great many dealers, distributors, and salesmen are making good money and are quite happy.

### Appliance Industry Can Point To Truly Remarkable Record

As for the appliance industry itself, it has a remarkable record. In America today there are about 32 million homes. About 24 million have electric service and about 16 million have gas service. When the year 1939 started, here was the national picture of appliance ownership (in round numbers):

22 million homes had electric irons.  
12 million had electric refrigerators.  
1 million had gas refrigerators.  
16 million had gas ranges or stoves.

2½ million had electric ranges.  
15 million had clothes washers.  
13 million had electric toasters.  
11½ million had floor vacuum cleaners.  
11½ million had electric clocks.  
8 million had an electric percolator or coffee maker.  
5 million had electric waffle irons.  
4½ million had electric heating pads.  
3 million had electric food mixers.  
1½ million had electric ironers.  
1 million had electric roasters.

In other words, in the typical American community:

11 out of 16 homes have electric irons.  
1 out of 3 has an electric refrigerator.  
1 out of 32 has a gas refrigerator.  
1 out of 2 has a gas range.  
1 out of 16 has an electric range.  
1 out of 2 has a clothes washer.  
1 out of 3 has a toaster.  
1 out of 3 has a vacuum cleaner.  
1 out of 3 has electric clocks.  
1 out of 4 has an electric coffee maker.  
1 out of 6 has an electric waffle iron.  
1 out of 8 has a heating pad.  
1 out of 10 has a food mixer.  
1 out of 30 has an ironing machine.  
1 out of 32 has an electric roaster.

### 1938 Wasn't a 'Good Year' But See What Happened

What did the homes of America buy last year (1938) in the way of home appliances? Here is the record of home appliances sold:

3 million electric irons.  
2½ million electric clocks.  
1½ million electric toasters.  
1¼ million electric refrigerators.  
185,000 gas refrigerators.  
1 million gas ranges.  
¼ million electric ranges.  
1 million clothes washers.  
1¼ million electric vacuum cleaners.  
¾ million electric coffee makers.  
½ million electric waffle irons.  
400,000 heating pads.  
350,000 sandwich toasters.  
300,000 electric mixers.  
225,000 electric roasters.  
100,000 ironing machines.  
100,000 electric water heaters.  
¾ million gas water heaters.

Again, in the representative community, here are the home appliances that were probably sold:

1 out of 3 homes bought an electric iron.  
1 out of 13 bought an electric clock.  
1 out of 21 bought an electric toaster.  
1 out of 26 bought an electric refrigerator.  
1 out of 173 bought a gas refrigerator.  
1 out of 32 bought a gas range.  
1 out of 142 bought an electric range.  
1 out of 25 bought a vacuum cleaner.  
1 out of 32 bought a clothes washer.  
1 out of 43 bought a gas water heater.  
1 out of 47 bought an electric coffee maker.  
1 out of 58 bought a waffle iron.  
1 out of 80 bought a heating pad.  
1 out of 91 bought a sandwich toaster.  
1 out of 106 bought a mixer.  
1 out of 142 bought an electric roaster.  
1 out of 320 bought an ironing machine.  
1 out of 320 bought an electric water heater.

### Better Class Homes Are Still Best Prospects

These home appliances took a large chunk out of the American family's pocketbook. In fact, the homes of America last year spent just about half a billion dollars on electrical appliances, excluding such items as lamps and radio sets, and about 300 million dollars for gas appliances.

Who is buying these appliances? Arthur Hirose, director of research for McCall's magazine, is authority

for the statement that more appliances are being sold to families who live in single-family homes than to families living in flats or apartments, that more appliances are sold to families that own their own homes than to families that rent, and that childless families are not so good a market for labor-saving devices as are those with offspring.

To these substantial homeowners, Mr. Hirose points out, there's a chance to sell the home appliances that are not yet in common use—the roasters, ironers, dishwashers, food mixers, and teakettles.

### Replacement Business Coming Into Prominence

"But equally good," he declares, "are the opportunities to replace existing appliances. As nearly as we can ascertain, there are literally millions of obsolete refrigerators, washing machines, ranges, toasters, irons, percolators, and other home appliances still in use.

"Some of these are replaced as their owners realize these appliances should be retired or traded in. But in most cases, I'm afraid the appliance industry must be chided for its lack of initiative in doing an appliance replacement sales job.

"There are millions of upper and middle income families of America to whom dealers can still hope to sell home appliances today.

"Left to their own devices, what appliances would these families buy? A number of surveys have been made that help to answer this question. Here's a study we made in 2,246 representative middle and upper class homes throughout the nation. 'What is the next important major purchase or expenditure you want to make?' was the question asked. When the answers had been added up here was the result:"

1st—Furniture and rugs.  
2nd—Vacation and travel.  
3rd—New automobile.  
4th—New refrigerator.  
5th—Household repairs.  
6th—New clothes.  
7th—New home.  
8th—Fur coat.  
9th—Clothes washer.  
10th—Vacuum cleaner.  
11th—New range or stove.

## They'll Do It Every Time . . . By Jimmie Hatlo



12th—New radio.  
13th—New heating equipment.  
14th—New electric range.  
15th—New sewing machine.  
16th—Jewelry.  
17th—School or educational courses.  
18th—Medical attention.  
19th—Air conditioning.

Statisticians and research experts such as Mr. Hirose show us by figures that it's still a great country, and that the appliance business has a great future.

What's more, hundreds of distributors and dealers in the appliance industry know that it's a great country and a great business—and that both have a great future. We are just at the threshold of the Electrical Age, and those now firmly entrenched in some branch of the electrical industry stand to do very well indeed as new applications of electrical service come out of the laboratories and onto the show-room floors.

### Problems Are Temporary; Progress Is Continuous

Sometimes we can't see the forest for the trees. These trees (i.e., vexatious immediate problems) loom up pretty big as one looks at them. But the industry will continue to blaze its trail through the forest, will continue to cut away the entangling underbrush, and will continue to accelerate its forward progress.

It's a great business to be in, and in view of its still greater future, each individual should base his policies for "the long pull," so that he won't be left by the wayside as the procession marches onward.

## LETTERS

### Hardy Produces His Own Compressors

Hardy Mfg. Co., Inc.  
100 Davis Ave., Dayton, Ohio

Editor:  
The information has come to us that statements are being circulated in the field that this company is only assembling compressors that can be built up from the stock of parts purchased from the old Trupar Mfg. Co. Any such statements are, of course, false and without foundation. The Trupar Mfg. Co. was sold in bankruptcy in 1934. The Hardy Mfg. Co., Inc., was incorporated Sept. 28, 1934,

and purchased the Commercial Division and Air-Conditioning Division of the Trupar Co., including machinery, fixtures, tools, etc.

The commercial units were never out of regular production, and we have continued to manufacture these "Mayflower" units ever since we took over this part of the old company almost five years ago. We did not purchase, nor do we have any connection with the household division of the Trupar Mfg. Co. which was disposed of elsewhere.

We welcome fair competition, but such loose and unfounded statements have no place in legitimate business. We will appreciate your publishing this letter so that everyone interested in Mayflower commercial condensing units, in whatever capacity, may know the true status of our company and its position in the industry.

HOMER H. HARDY,  
President

### Specifications Reprint Now Available

Iowa-Nebraska Light & Power Co.  
Office of the District Manager  
Avoca, Iowa

Sirs:  
Enclosed please find 20 cents in coins for which I would like to receive a copy of "1939 Specifications" published by AIR CONDITIONING & REFRIGERATION NEWS which contains information on 27 different makes of refrigerators.

This publication was mentioned in General Electric Refrigerator Salesman's Bulletin No. 4 of the 1939 series.

O. J. STONE,  
District Sales Supervisor

Answer: Specifications of all models of all leading makes of household electric refrigerators were published in a special (8½ x 11 inches) supplement to the March 29 issue of AIR CONDITIONING & REFRIGERATION NEWS. Although extra copies were printed of this supplement, it was soon sold out.

The supplement has just been reprinted to fill orders received after the original printing had been sold out, and to fill other orders. However, since the reprint was rather limited in number, it is advisable for those wanting copies of the supplement to order them immediately. Price is 20 cents per copy; 10 or more, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

### Has Phoenix Only 10 Air-Conditioning Jobs?

343 Fourth St.  
San Francisco, Calif.

Editor:  
As a constant reader of your paper I find many interesting articles that are always helpful, and always look forward to every week's copy.

In the edition of May 24, in the "Cold Canvass" section, I noticed that you wanted the "low down" on the claim that Phoenix, Arizona, had become the "Air Conditioning Capital of the World."

There are only about 10 actual air-conditioning jobs in the city, and these are made up of banks, theaters, and department stores. The rest of the so-called "air conditioning" and cooling is nothing more than the desert coolers that fit into the window frame or in the wall.

(Concluded on Page 13, Column 1)



## Housewife Races Dishwasher—Loses, of Course



Competing for the New York World's Fair Dishwashing championship (unofficial), the two women on the stage above staged a most unequal battle. One of them had the help of a Westinghouse dishwashing machine, which finished up her load in 11 minutes flat—by which time the other woman, equipped only with soap, water, and elbow grease, was just getting under way. The contest was staged in the Westinghouse exhibit at the Fair.

### LETTERS

(Concluded from Page 12, Column 5)

There are many local companies there that make these coolers which simply consist of a metal shell with a revolving drum inside or a suction fan and a small water line that saturates the stuffing which is sometimes excelsior or some other substance which will soak up the water, but as far as actual refrigerated conditioning with humidifiers and dehumidifiers there is very few.

Having lived in Phoenix for about eight years, and having just made a trip there a couple of weeks ago, I think that you will find this information to be fairly correct.

E. F. BETHANCOURT  
Note: I am employed here in San Francisco by a large manufacturer of refrigerating machinery.

### It Costs Plenty To Do Original Reporting

Automatic Heating & Cooling Supply Co.  
647 West Lake St.  
Chicago, Ill.

May 27, 1939

Sirs: We are publishing a house-organ to our service dealer trade each month, and find that we need various articles by authorities on refrigeration service methods and products.

We note that you publish several of these in each of your issues, and wonder if you would give us permission to rewrite these, giving credit to the author and a by-line for you.

M. KAUFMAN  
Answer: We would like to assist you with your plans to issue a house-organ but please remember that we maintain an editorial staff and an establishment for the purpose of collecting and editing information for the industry.

We receive many requests for reprinting privileges and it is evident that many people fail to realize the great expense that is involved in the preparation of original news matter and technical data.

If you have the urge to be a "publisher," first ask yourself whether you have any worthwhile information of your own to offer your prospective readers. If your only "editorial tools" are a "pastepot and shears" then it would be far better to direct your efforts in other channels.

As independent publishers we must depend entirely upon the revenue

received from subscriptions and advertising and we cannot look with favor on publishing activities of the parasite variety.

### Fruit Storage and Window Refrigeration

E. F. Wilks & Co., Pty., Ltd.  
124 Castlereagh St.  
Sydney, N.S.W., Australia

Editor:

We notice an article in our Dec. 7, 1938 copy of AIR CONDITIONING & REFRIGERATION NEWS, referring to an illustrated booklet prepared by the Portland Cement Association dealing with fruit storage.

As their address is not given we would be pleased if you would kindly forward our request to them.

We would be grateful, also, for a copy of an article published some 12 months ago, dealing with window refrigeration. We are particularly interested in this subject and the information contained, we believe, in this article, would be of great assistance to us.

Should there be any cost attached to these requests, we would deem it a favor to advise us when a remittance will be forwarded to cover the charge.

We would like to take this opportunity of expressing how much we value the information contained in AIR CONDITIONING & REFRIGERATION NEWS and we have in fact gone to considerable trouble to compile in book form for use in the office, all articles dealing with commercial refrigeration. We have found it of great value.

A. D. CAVENAGH,  
Technical Engineer

### Plumbers Don't Become Engineers Overnight

Gordon H. Simmons  
926 Cass St., Milwaukee, Wis.

Editor:

Thank you for your March 1 sample copy of AIR CONDITIONING & REFRIGERATION NEWS, just received. Even though the issue was old, it did contain "Terhune Elaborates on What's Wrong with Engineering, Price & Merchandising of Air Conditioning," and he pleads guilty for the industry to the accusation I have been making for the past three years in the pages of "Boxoffice," a trade publication for the education and edification of theater owners.

Of all the messes made by dealers in the theater field, my files adequately show. The chiseling tactics of the theater owners have not helped any, either.

And while I can contribute no

helpful thought to the masterly exposition of conditions by friend Terhune, I can at least say "Amen" and help him pray that the manufacturer some day awakes from his benighted ignorance and places upon the market apparatus that is not a misapplication of old stuff.

I have warned theater owners against the well meant efforts of plumbers, sheet metal workers, and hardware dealers who have become engineers overnight and now have the latest designs in air conditioning made in their own shop. Out of tin.

Air conditioning cannot be reduced to a "gadget business" though efforts are being made to do so. But at least the gadgets so necessary in this game can be designed to fit into a "system" instead of into a conglomeration of parts.

I am sending Terhune's article to the editor of "Boxoffice," and I would like permission to publish extracts of it, of course giving the usual credit. As its air-conditioning editor, I publish a few of the many letters received in each monthly issue. These letters show the damage done by ignorant but well intentioned firms who are a liability to the industry.

GORDON H. SIMMONS

### Hope To Have Code In Houston, Tex.

Burroughs Service Co.  
T. L. Burroughs, Owner  
Fountain Carbonator and Electric Refrigeration—Installation and Service

2507 Capitol Ave., Houston, Tex.

Sirs:

Enclosed find 35 cents covering

### Anaconda Copper Refrigeration Tubes

Easily bent!



THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE BRANCH  
General Offices: Waterbury, Conn.

cost of copy of "Refrigeration Code" for City of Detroit, including postage. Please mail a copy to us so that we will be able to see what the requirements are for installations and service in your city, therefore without a doubt improving our condition here because we do not have a code, however, hope to.

T. L. BURROUGHS

### Wants Air Conditioning Association Bulletins

Kramer Auto Radiator Corp.  
210 W. 65th St., New York City

Sirs:

Please place us on your list to receive the Bulletin of the National Air Conditioning Association.

Please mail them to our New York office. Thank you.

KRAMER AUTO RADIATOR CORP.

### QUOTED

### Heating & Refrigeration Prove Unsound Tie-Up

REORGANIZATIONS have taken place in a number of the leading producers of air conditioning in the past six months. When such things happen, comment goes the rounds. It is difficult at the time to tell just what it may mean as to policy, but one or two important trends have emerged unmistakably this time.

The notion of year-around air conditioning as a single technique has definitely fallen from grace. It arose for a number of reasons. Here were two related fields, one with a peak in the summer, another with a peak in the winter, so why not tie them up? Refrigeration machinery manufacturers set up to manufacture commercial equipment could readily

manufacture air-conditioning equipment such as room coolers and large condensing units. When they did this four or five years ago, their commercial sales outlets, dealers and distributors, expected to sell this equipment, but in most cases they were disappointed.

The manufacturers chose to put air conditioning on the market not as an adjunct to refrigeration, but as part of the heating trade. They set up subsidiaries and agencies selling oil burners along with room coolers.

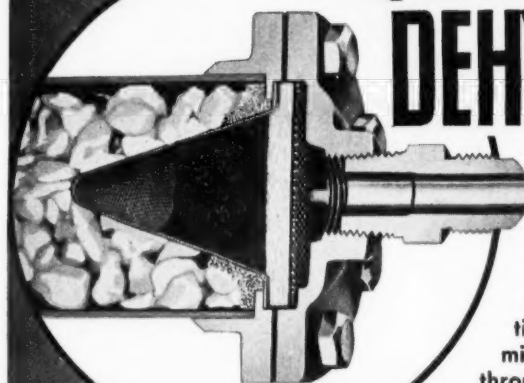
Independently the manufacturers of heating equipment eagerly sought to get on the air-conditioning bandwagon and started calling everything by that term. They too went in for year-around air conditioning and added cooling machinery to their wares. It seemed that the heating and refrigeration trades were tied intimately in the largest part of their output, i.e., that part going to the ultimate consumer, especially the home owner.

The notion was basically unsound for two reasons. First, air conditioning so conceived was not one market but two. On the one hand, the average sales ran about, say, \$400 for an oil burner or heater in a home, and on the other at, say, \$4,000 for a cooling system in a store.

Secondly, the heating trades were not set up for this type of equipment or servicing it, and moreover the seasonal aspects did not fit together either. Beyond all this, seen in its domestic aspects, the market was not nearly so receptive to air conditioning, winter or summer, as expected. Nor have the makers of hot water and steam systems of heating been inactive.

In the upshot it appears that the heating trade will go on selling boilers, burners, and stokers, while commercial air conditioning will become an adjunct to the commercial refrigeration business.—D.L.F.—From Refrigerating Engineering.

## TIME TESTED AND IMPROVED! DEHYDRATORS



These new TIME-TESTED Dehydrators have these outstanding advantages:

1. Cone-shaped screen—providing greatly increased separating area. Shape of screen causes particles to settle at base of cone, permitting free passage of refrigerant through center.
2. Pure wool packing inside cone screen—a further protection which traps dust-like particles which may penetrate screen.
3. Improved felt pad between interior cone screen and exterior flat screen.

Most dehydrating agents used in refrigerating systems are continually being sub-divided into smaller or dust-like particles. This may happen through the taking up of moisture, or by abrasion, etc. These particles restrict the capacity of, and sometimes completely clog the disc screens and filters with which the old, or conventional, type dehydrator is equipped, resulting in pressure drop and eventual trouble at the expansion valves.

All Mueller Brass Co. Dehydrators are now provided with cone-shaped screens. This new feature, together with other improvements, provides maximum drying efficiency with minimum pressure drop. There is a right style for every purpose. Write for descriptive literature.

Stocked by leading jobbers everywhere.

MUELLER BRASS CO.  
PORT HURON, MICHIGAN  
STREAMLINE

TRADE MARK REG. U. S. PAT. OFFICE

MORE EFFICIENT · LESS RESTRICTION · GREATLY INCREASED SCREEN AREA ·

When You Standardize on PURE . . . DRY . . .



The Preferred METHYL CHLORIDE

You Receive The Benefits of . . . DU PONT RESEARCH & TECHNICAL ASSISTANCE Plus COAST-TO-COAST DISTRIBUTION



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## Commercial Service

### Throttling Valves Control Five Circuits In '1936' Brunswick Soda Fountains; Compressors Require Oil Separators

By Arch Black and Dean C. Seitz

#### Controlling of Temperature of The Respective Circuits And Settings

Similar to any other soda fountain refrigeration hook-up, the brick storage compartment temperature is the lowest to be maintained. The desired temperature is maintained by the pressurestat setting on the condensing unit and the basic recommended settings are as follows:

Methyl Chloride—Cut-in point, 18 lbs.; cut-out point, 6 inches.

"Freon"—Cut-in point, 35 lbs.; cut-out point, 0 lbs.

It is to be understood that these are basic recommended settings and it may be necessary to deviate from them under certain circumstances, full details of which will be given later.

The other circuits are individually controlled by their respective pressure regulating valves. These valves are of the throttling type and a cross-section of the valve is shown in Fig. 2. Each valve is set at a predetermined setting and it is regulated by the gas pressure within the respective circuits.

As heat is applied to any of the coils of the respective circuits, the refrigerant is vaporized, creating a pressure within the coil and which raises the bellows plate and the needle in the control valve from its seat. With the valve open, gas is allowed to pass into the main suction manifold to the compressor. As the required temperature in a given circuit is approached, by liberating sufficient vapor from the coil through the valve, it begins to close. When the pressure is lowered to the predetermined setting, atmospheric pressure plus the spring pressure, the valve automatically closes. Consequently with a good needle and seat and no foreign matter in the valve, the temperatures in the respective circuits will not drop below that pressure for which the control is correspondingly set. Bear in mind that for all practical purposes there is no differential in the valve.

The approximate settings of the respective valves are as follows:

Control	Methyl Chloride	"Freon"
(a) Water circuit	26 lbs.	34 lbs.
(b) Bulk storage	6 lbs.	12 lbs.
(c) Syrup rail	29½ lbs.	39 lbs.
(d) Dry storage	26 lbs.	34 lbs.



## THE JOBBER WHO WORKS FOR ANSUL WORKS FOR YOU

THAT'S HIS BUSINESS, and that's why he's in business. We're proud of the Ansul Jobber Organization . . . as proud of these men as we are of our Ansul products. And we feel certain these Ansul Jobbers are as proud of their wholehearted, friendly service to you as they are of their business integrity. Let the Ansul Jobber near you begin serving you now!

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**ANSUL**  
SULPHUR  
DIOXIDE  
•  
METHYL  
CHLORIDE

MARINETTE  
WISCONSIN

## The Completeness of the CURTIS Line Assures the Correct Equipment for Every Air Conditioning or Refrigeration Need

WHETHER you buy, sell, install or specify air conditioning or refrigeration equipment, there's a Curtis unit that fulfills every requirement. Curtis covers a wide range of markets—makes possible greater sales. And you can specify Curtis products with absolute confidence.

The Curtis Store and Office Cooler fulfills the air conditioning demands of all classes of retail establishments. It's a complete, factory designed, packaged air conditioning unit. It mechanically cools, dehumidifies, circulates and filters the air—is quickly and easily installed with only water and electrical connections needed—adaptable for heating, too. It is offered in 3 and 5 ton sizes.

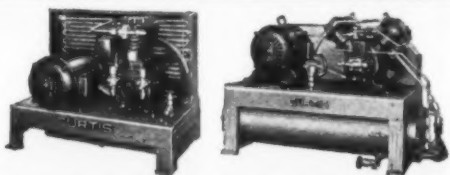
The Curtis Line of Condensing Units includes sizes from 1-6 H. P. to 30 tons air and water cooled—also unit coolers, coils, evaporative condensers, etc. Every Curtis product is precision engineered to deliver economical, efficient, care-free performance throughout an exceptionally long life.

### Curtis Refrigerating Machine Company

Division of  
Curtis Manufacturing Co.  
1912 Kienlen Avenue,  
St. Louis, Mo.



"Builders of Condensing Units Since 1926"



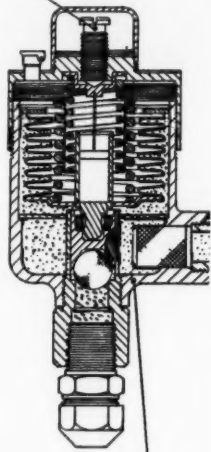
48 Air Cooled Units—45 Water Cooled Units  
—1½ to 30 H.P.



The Curtis Store and Office Cooler  
3 and 5 ton sizes

Fig. 2—Control Valve

TEMP. ADJUSTING SCREW



PRESSURE CONTROL VALVE

Cross-section of throttling-type pressure regulating valve used to control refrigeration circuits in the 1936-1937 Brunswick-Balke-Collender soda fountains.

The pressure regulating valves are manufactured by Temprite Products Corp. and the model 750 has a sufficient range to permit the settings for all circuits except the bulk ice cream. Later on it will be pointed out how the suction line from three circuits, water, syrup rail, and dry storage, can be connected to one of these valves, to obtain the desired temperatures.

The model 750 does not have a sufficient range to meet the required setting of the bulk ice cream circuit, but the Temprite control model 900 has a range of 0-35 lbs. Either of the valves are readily adjusted in the field merely by turning the adjusting screw which is shown on Fig. 2.

On top of the valve an arrow indicates the direction for turning the screw to either warmer or colder. Approximately one turn of the adjusting screw produces a 1 lb. change in valve setting.

#### CHECK VALVE

On the 1936-37 Brunswick fountain two check valves are used, one located on the brick storage circuit at the suction manifold and the other on the bulk storage circuit on the inlet of the control valve marked "B." Both of them can readily be seen from Fig. 1 (June 7 issue). These check valves prevent high temperature gas from the other circuits from backing up into the lower temperature circuits.

#### SURGE TANK

On all Brunswick fountains a surge tank must be used in connection with the instantaneous cooling principle of their water and soda cooler. Primarily the function of a surge tank is to prevent short cycling of the condensing unit. The surge tank which is dead ended into the suction line, filling with condensed gas gives the system something to work on when it starts and without

the surge tank a large compressor would run only for a few moments and then at far too short intervals.

Complete description and functioning of a surge tank was given in the April 26 issue as it applied to the Bastian-Blessing fountain and with the exception of sizes there is no difference in their purpose as they apply to the Brunswick fountains. Even though the condensing unit may be supplied by others, Brunswick-Balke-Collender Co. supplies one or more surge tanks with each fountain depending upon its size.

#### OIL SEPARATOR

It is important to note that an oil separator must be installed on every compressor used with a Brunswick fountain. If the compressor is supplied by firms other than Brunswick, the Brunswick-Balke-Collender Co. will not be responsible for the operation of the fountain unless the oil separator which it supplies with its equipment is installed on the condensing unit supplied by others. The oil separator recommended by Brunswick is that manufactured by the American Injector Co., Detroit. The automatic oil separator should be installed between the compressor discharge valve and the condenser

which can be noted from Fig. 1. The gas containing oil is passed into the separator where its velocity is retarded and as it passes over a series of baffle tubes the oil is removed and the gas passes on to the condensing unit. The oil which is separated falls to the bottom of the shell and when a sufficient quantity has accumulated to open the float valve, the load returns to the crankcase.

Eight and one-half fluid ounces of oil are necessary to lift the float valve in the oil separator. When installing the unit this initial quantity should be put in the separator by pouring the same oil as is used in the compressor through the inlet connection.

Fig. 3 is a cross-section of a typical oil separator and it should be noted that when mounting the separator it should always be in a vertical position and firmly set to the compressor base or other suitable rigid mountings.

With the exception of the bobtail unit, Brunswick supplies the oil separator with each fountain shipped from the factory.

### E. Storm Sets Record To Win Kansas City Bending Contest

KANSAS CITY, Mo.—One of the lowest times ever recorded in a refrigeration tube-bending contest was attained by E. J. Storm, service engineer for C. L. Kennedy, St. Joseph, Mo., in winning the contest sponsored by the Kansas City chapter of Refrigeration Service Engineers' Society.

Mr. Storm's time was 14 minutes 30 seconds, to put him well ahead of other contestants in the project. The contest drew an attendance of 100 persons.

Second place went to Jules DeWilde of DeWilde Refrigeration Service, Kansas City, and third place to R. Meeker, also of the DeWilde organization.

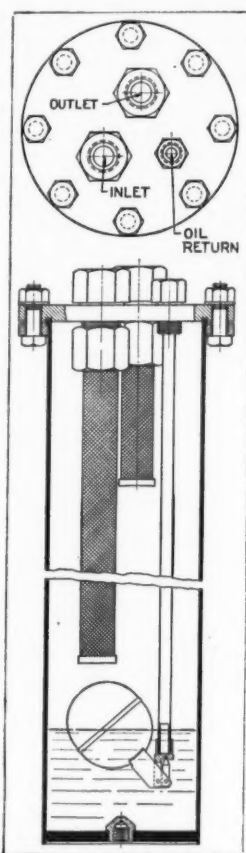
Judges were M. W. Pehl, consulting engineer; M. M. Rivard, local Detroit-Lubricator representative; and E. Mertz, Diesel-Power United Engineering Schools, Kansas City. Timekeeper was W. L. Davidson, Refrigeration Equipment Co., Kansas City.

Blueprints and equipment for the contest were furnished by Imperial Brass Mfg. Co.

### Madigan & Muller Named To Servicing Staff

SCRANTON, Pa.—Emil Madigan and Robert Donald Muller have joined the servicing staff of Gethman & Muller Co. here.

Fig. 3—Oil Separator



Oil separators must be installed on every compressor used with Brunswick soda fountains. Cross-section of a typical automatic oil separator is shown above.

### Index To Previous Articles on Servicing Soda Fountains

Following is an index to the previous articles in this series on servicing of soda fountains, counter-type freezers, and low-temperature cabinets.

Introduction—Oct. 19, 1938  
Kinds of Refrigeration Systems Used in Soda Fountains—Nov. 2  
Design of the Two-Boiler Creamer Unit and Service Instructions—Nov. 9  
Information Needed in Mixing of Brines and Filling Brine Tanks Used in Soda Fountains—Nov. 16  
Service Complaints and Instructions for the "Two-Boiler" Soda Fountain—Nov. 23, Nov. 30, Dec. 7, and Dec. 14  
Operation of the One-Boiler "Thermo-Syphon" Soda Fountain—Dec. 21  
Service Complaints and Instructions for One and Two-Boiler Thermo-Syphon Systems—Dec. 28  
Service Complaints and Instructions for Three-Boiler Soda Fountain Systems—Jan. 4  
Service Methods on Cooling Systems for Jar Enclosure Sections of Soda Fountains—Jan. 11  
Operation of "1928 Liquid Hook-Up"—Jan. 18  
1931 Liquid Carbonic Soda Fountain

Operation Outlined for Servicing—Jan. 25  
Hook-Up and Operation of Controls in 1935 Liquid Carbonic "F-12" Fountain—Feb. 1

1936 Liquid Carbonic Fountain—Feb. 8  
Controls and Solenoid Valves in Later Russ Systems—Feb. 15

How Control Valves Are Used in Three Circuits of Russ 1936 Fountains—Feb. 22  
Refrigerant Charge, Line Size, and Control Settings For Direct Expansion Fountains—Mar. 1

Correct Methods of Testing Solenoid Valves and Cold Controls—Mar. 8

Analysis of Service Complaints on Fountains, and Remedies—Mar. 15, Mar. 22, Mar. 29, and April 5

How Instantaneous Water Coolers Are Incorporated in Soda Fountains—April 12  
Refrigeration Hook-Ups for Soda Fountains Using Instantaneous Water Coolers—April 19

Installing and Servicing of Controls for Instantaneous Water Cooler Fountains—April 26

Correct Charging and Setting of Controls for 1937-1938 Fountains—May 3

Service Complaints on Fountains With Instantaneous Water Coolers Analyzed—May 10, May 17, May 24, and May 31

Hookup and Operation of "1936" Brunswick Fountains—June 7

### Sell Something Easy to SELL!

The New H. & H.

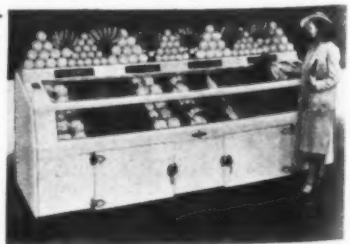
### PRO-DU-SELLER

Double Duty Vegetable Case

Designed by a Master Merchant FOR MERCHANTS. Height 52 in. New hydrator refrigeration principle. Equipped with exclusive H. & H. illuminated "Sales Increaser" Panels. The fastest selling, biggest money making case on the market. Get this case in your line NOW.

Write for information regarding franchise for H. & H. Refrigerator Products in Your Territory

HOLCOMB & HOKE MFG. CO., Indianapolis, Indiana





# Jobber Activities

## Combination Air Conditioning, Service & Jobber Operation Profitable In Cuba

**Editor's Note:** The following article might well have been put under some other general classification such as "Foreign News" or "Service News," and while it will be of interest to readers interested in those subjects, we believe that the essential part of the story that Mr. Alvarez tells is that of the development of a refrigeration supply jobbing business in Cuba.

Mr. Alvarez has some rather fresh viewpoints about certain phases of his business, and though his practice of retailing service would not be condoned by the National Refrigeration Supply Jobbers Association in this country, it must be remembered that he has to mold his operations to fit a particular situation.

By A. Alvarez, Manager, Servicio General de Refrigeracion, Havana, Cuba

Since writing the article published in the Foreign Trade Number, Dec. 2, 1936, I had not had the pleasure of sending additional information on the subject of refrigeration and air-conditioning business in Cuba, which might be of interest to the readers of AIR CONDITIONING & REFRIGERATION NEWS.

Knowing it my duty to serve when called upon, I replied to your letter of recent date, accepting your kind invitation to write another article telling of our refrigeration service work in Havana, also relating to some of our sales activities (confined to parts and accessories exclusively), and pointing out some of our difficulties and some of our triumphs.

### CONDITIONING GOOD

It is gratifying for us to state that our opinion as set forth in the above-mentioned article, anticipating good prospects for the development of air-conditioning business in this market, has proven to be correct. At that time we were performing an air-conditioning job in Radio Cine, the largest installation ever undertaken until then in Havana, consisting of four Westinghouse model CLS-795 compressors, 25-hp. capacity each.

Now, in 1939, the total horsepower applied to air-conditioning systems connected to circuits from light and power plants owned and managed by the Compania Cubana de Electricidad (Bond & Share), amounts to 1,049 hp., against 205 hp. in 1936, or a total increase of 744% during 1937 and 1938. The bulk of the business was obtained in 1938 (539½ hp. showing an approximate value of \$176,400).

### SEVERAL INSTALLATIONS

Through our service department we have been able to contract and perform the complete refrigeration installation of air-conditioning systems at present in operation, as follows:

Fausto Theater, three Westinghouse model CLS-1320 compressors of 40 hp. each; Alkazar Theater, three Westinghouse model CLS-1320 compressors of 40 hp. each; French Casino, one Westinghouse model CLS-640 compressor of 20 hp.; and Fin de Siglo (department store), two Fairbanks-Morse compressors of 15 hp. each. Also five installations in surgical operating rooms at an equal number of private hospitals, and other additional jobs of minor importance.

The balance of horsepower used for air-conditioning systems up to 744 hp. has been sold and installed by General Electric, Frigidaire, Carrier, Kelvinator, etc.

The data given herein as to the load and approximate value of equipment we have been able to secure through the courtesy of Compania Cubana de Electricidad.

### START ANOTHER JOB

Early next month we shall be ready to start another air-conditioning installation at Compania Cubana de Electricidad, main floor, requiring one CLS-850, 25-hp. unit, which job we have under contract with Compania Electric de Cuba, distributor of Westinghouse.

Our commercial refrigeration service and installation business has been progressive to a very consider-

able extent. Much of our success we attribute to our policy of rendering as adequate and as good service as we are able to offer our clients by means of a carefully selected group of highly trained and experienced mechanics.

When we started our service business in 1931, our idea was to provide for a most pressing need in any city having a population of more than 600,000 inhabitants—which we believe is the case in many cities all over the world, even with a population of 100,000 inhabitants. The writer was fully aware, from the very beginning of our enterprise, that the reputation of any refrigeration make depends largely upon an efficient installation of the equipment and, undoubtedly, the manager of any properly conducted service shop must realize that the potentiality of the service in developing the sale of such apparatus is greater than that of any other factor in this line of business. It is obvious that dissatisfaction on the part of a refrigerator owner is always detrimental to the business in general, no matter what the make of the deficient unit may be.

### EARLY DIFFICULTIES

One of the most serious difficulties we had to contend with in the early days of our service activities was the lack of spare parts. In some instances, the policy then imposed by manufacturers of refrigeration units to their distributors abroad was not to sell replacement parts. On the other hand, quite frequently we had a call for servicing an equipment not having a local distributor any longer.

Realizing that the facility for obtaining parts required was of paramount importance to a successful service business, we immediately began to make contacts with suppliers in the United States, from whom we were then able to purchase such parts and accessories needed to solve our problem.

### 'BIRTH OF A JOBBER'

As our business was increasing rather rapidly, we decided to keep a limited stock of parts to cover our requirements. However, other service shops and service men, knowing that we had spare parts in stock, soon began to purchase from us.

We agreed, in principle, to sell these refrigeration parts merely as a matter of cooperation and help to our colleagues, not with a view of profiting on them, but a few months thereafter our sales on the counter had increased to such an extent that we were forced to create a retail sales department in addition to our service business.

Almost simultaneously some of the refrigeration companies established in Havana also called on us to acquire replacement parts from our stock, particularly when their stock of certain parts had been exhausted.

### MARKET COVERED

Many changes in design of refrigeration equipment and improvement in replacement parts mostly every year, new products being offered by manufacturers, etc., have been contributory to the fact that it is almost impossible for refrigeration companies in Havana (branches, distribu-

tors, dealers, etc.), to maintain a complete stock of materials used in the installation and service, and, under the circumstances, we are now pleased to state that today every concern selling refrigeration equipment in this country buys parts and accessories from us to cover their immediate needs. We take this opportunity of expressing to these companies our deep appreciation for their valued patronage.

During 1937 and 1938 we faced another serious problem, i.e., some jobbers in the United States began to contact service men owning small service shops (not having any idea as to overhead and cost) and were offering prices much lower than those corresponding to such clients according to their classification. These contacts were made either direct or through local agents.

### PROBLEMS OF SELLING

Another jobber in the United States has widely spread a catalog throughout the Island, where net prices are imprudently shown, instead of showing list prices and then quoting discounts separately as per type of customer. The results are that even the ultimate customer, which includes owners of grocery stores, bars, cafes, retail butchers, etc., know the net cost of any part, inasmuch as many service men not having the cash money to order a replacement, have shown the catalog to their clients so as to induce them to obtain a post office money order in favor of the supplier.

Quite often the work is not satisfactory to the owner of the equipment—and then he decides to call for service either on the local distributor of the unit or on a reliable

service organization; however, in quoting him, for instance, \$12 worth of material, he "gets up in the air," feeling that he is being robbed, just because the price quoted in the catalog is, say, \$6.

You can never roll into his mind that this refrigeration business is entirely different from that of retailing foodstuffs, where daily movement, quick turnover, small investment, etc., permits selling for \$1.20 what costs \$1 and even obtaining a fairly good profit.

To overcome these difficulties and avoid further demoralization of the market, beginning January first this year, we inaugurated a sales division—whereby we are not only in a position to solicit orders for direct shipment to large importers, but have also established a method of proper distribution by means of consolidated shipments, so that even quoting prices as per classification of the customer, the cost of the product in most cases is lower, delivered our warehouse, inasmuch as shipping expenses, freight, custom house clearance, etc. on an order of say \$50 included in a consolidated shipment amounts to around 25%, whereas the expenses on same order if imported direct by the client would cost him from 40 to 100% expenses ad valorem.

### HANDLING COMPLAINTS

A wide circularization of our plans is bringing results desired. In addition, our shipping department is well prepared to despatch orders from interior towns same day received, as we keep a complete stock of materials more in demand.

If defective material from our stock is returned to us, and our

inspection shows that the failure is due to a manufacture defect, we supply our customer with a new replacement. If the part is in good condition and the customer is located out of town, we also send a new one and use the returned material in our own service, giving our client necessary instructions as to its handling.

If the complaint is, for instance, on a thermostatic expansion valve which has been installed somewhere in the city or suburbs thereof, we send one of our experts to show the service man how it operates or "repair the defect" which usually is not in the valve. Under this new plan, service shop and service men prefer to obtain their requirements from us, thus preventing their showing to owners of refrigerators what they call "factory price."

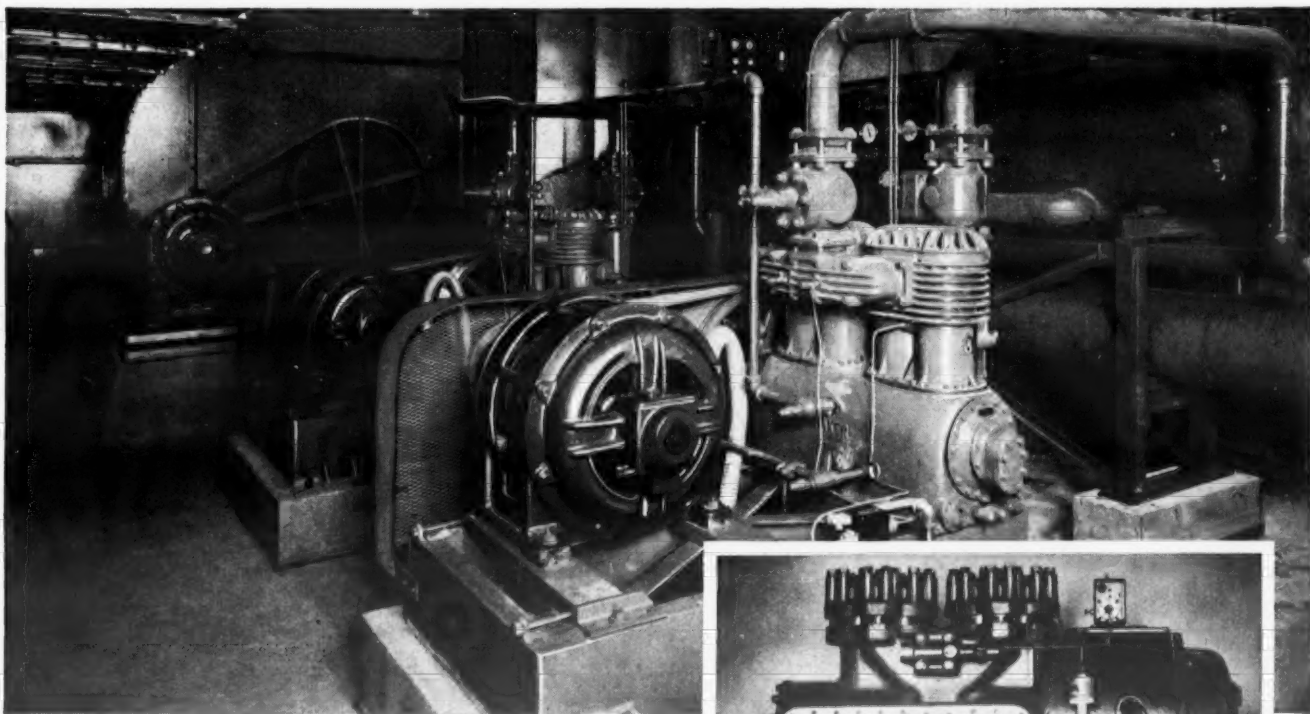
### COMBINATION BEST

In conclusion, we believe it is of primary importance for a highly organized service institution in any part of the world where field conditions are alike to combine a well conducted service and jobbing business.

In our case we are very glad to say that our company is playing an important part in keeping refrigeration parts and accessories moving into trade channels so successfully as it has been our service end of the business.

I sincerely hope that the foregoing will prove to be of some interest to the many thousands of readers of the NEWS, but particularly to American manufacturers, to concerns dealing with the sale of refrigeration parts, and to those engaged in this sector of the industry.

## MOISTURE FREEDOM MEANS SLUDGE FREEDOM



40- AND 50-TON BAKER ICE MACHINES in University of Omaha building installed by Baker Ice Machine Company, Omaha, Nebraska. Texaco Capella Oil "D" in use.

WESTINGHOUSE AIR CONDITIONING UNIT with cover removed, showing crankcase. Photo courtesy Westinghouse Electric & Manufacturing Co.

REFRIGERATING AND AIR CONDITIONING UNITS are all alike in this. To keep them trouble-free, they require a thoroughly "dry" lubricant.

To insure this, many of the leading manufacturers charge their units at the factory with Texaco Capella Oil. Texaco Capella Oils are dehydrated, keeping oil lines free and expansion valves working properly. They do not react with refrigerants.

Lubrication engineers, trained in the selection and application of Texaco Lubricants for refrigerating equipment will be glad to demonstrate that Texaco Perfected Lubrication can make savings for you.

To get this engineering service and prompt delivery, phone the nearest of our 2229 warehouses, or write:

The Texas Company, 135 East 42nd St., New York City.



Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—9 E.D.T., 8 E.S.T., 8 C.D.T., 7 C.S.T., 6 M.S.T., 5 P.S.T.

## TEXACO CAPELLA OILS

FOR USE WITH ALL TYPES OF REFRIGERANTS



# Engineering

## Faster, More Accurate Calorimeter For Compressor Tests Developed By Wile

HERSHEY, Pa. — Construction and operation of a new-type portable calorimeter for use in determining capacity of refrigerating machines was described by D. D. Wile, chief engineer of the refrigeration division of Savage Arms Corp., before the recent spring meeting here of the American Society of Refrigerating Engineers. Mr. Wile developed the calorimeter which he described for use in his work at the Savage Arms plant.

Many of the calorimeters used for compressor testing have the disadvantage of requiring much time for each test run and depending for accuracy upon tedious manipulation of delicate adjustments. The calorimeter described by Mr. Wile overcomes these disadvantages and has a number of desirable features, some of which are:

1. Compact and easily portable.
2. High degree of accuracy.
3. Moderate cost.
4. Short time required for test runs.
5. Does not require accurate regulation of line voltage.
6. Reasonably fool proof.

The design is of the secondary refrigerant type using intermittent heater operation, the heater being controlled by a pressure switch working on the pressure of the secondary refrigerant. Both heater input and motor input are measured by watt-hour meters having fast reading dials. Suction pressure is regulated by a constant pressure expansion valve and superheat of the suction gas can be controlled by varying the pressure of the secondary refrigerant.

When conducting a test, said Mr. Wile, the only adjustments required are: (1) adjust expansion valve for desired suction pressure, (2) adjust pressure control for desired superheat. Neither of these adjustments is in any way delicate and once set they remain constant.

Since the operation is completely automatic, no attention is required except for noting meter readings at the start and finish of the test run. Three minutes is sufficient time to assure an accuracy of better than 2%.

Fig. 1 shows a general view of the complete calorimeter and in Fig. 2 it is shown connected to the compressor of an ice cream cabinet in order to measure performance under actual operating conditions.

### CONSTRUCTION

As shown in Fig. 1, the calorimeter cell or "boiler" with its insulated enclosure is mounted within a metal frame. This frame also supports an instrument panel and provides a flat surface for use as a desk. The frame rests on casters for easy portability.

Detail construction of the boiler is shown in Fig. 3. A 4-in. receiver having thin walls was used for the

outer shell. The coil consists of 17 feet of 1/2-inch steel tubing. The heater well was kept small in order to hold a minimum quantity of refrigerant. Sight glasses provide means for inspecting the height of liquid.

The ordinary type of immersion heater has entirely too much lag and will cause long heater cycles, declared Mr. Wile. Much of the success of the apparatus depends on the design of this heater.

The heater shown in Fig. 3 has its wire element in direct contact with the liquid "Freon" in the boiler. It was constructed by winding the wire in a long coil and then wrapping the coil on a bakelite tube. The heater has two sections which are connected through a three-heat switch so as to supply 275, 550, or 1,100 watts. Leads to the heater are carried through bakelite bushings machined to a tight press fit.

### WATTHOUR METERS

The ordinary watthour meter reads directly to one kilo-watthour and at best, readings can be estimated no closer than 100 watthours, Mr. Wile explained. In a three-minute run on a 1/2-hp. compressor, operating at low suction pressure, the heater consumes only about 20 watthours. Obviously a fast reading meter is required, the speaker pointed out.

Special watthour meters were obtained with a dial ratio 1,000 times as fast as normal. These meters read directly in watthours and can be estimated to a fraction of a watthour. This type of meter has been developed to a high degree of accuracy and is relatively inexpensive. They can be easily checked at any time by means of a portable standard.

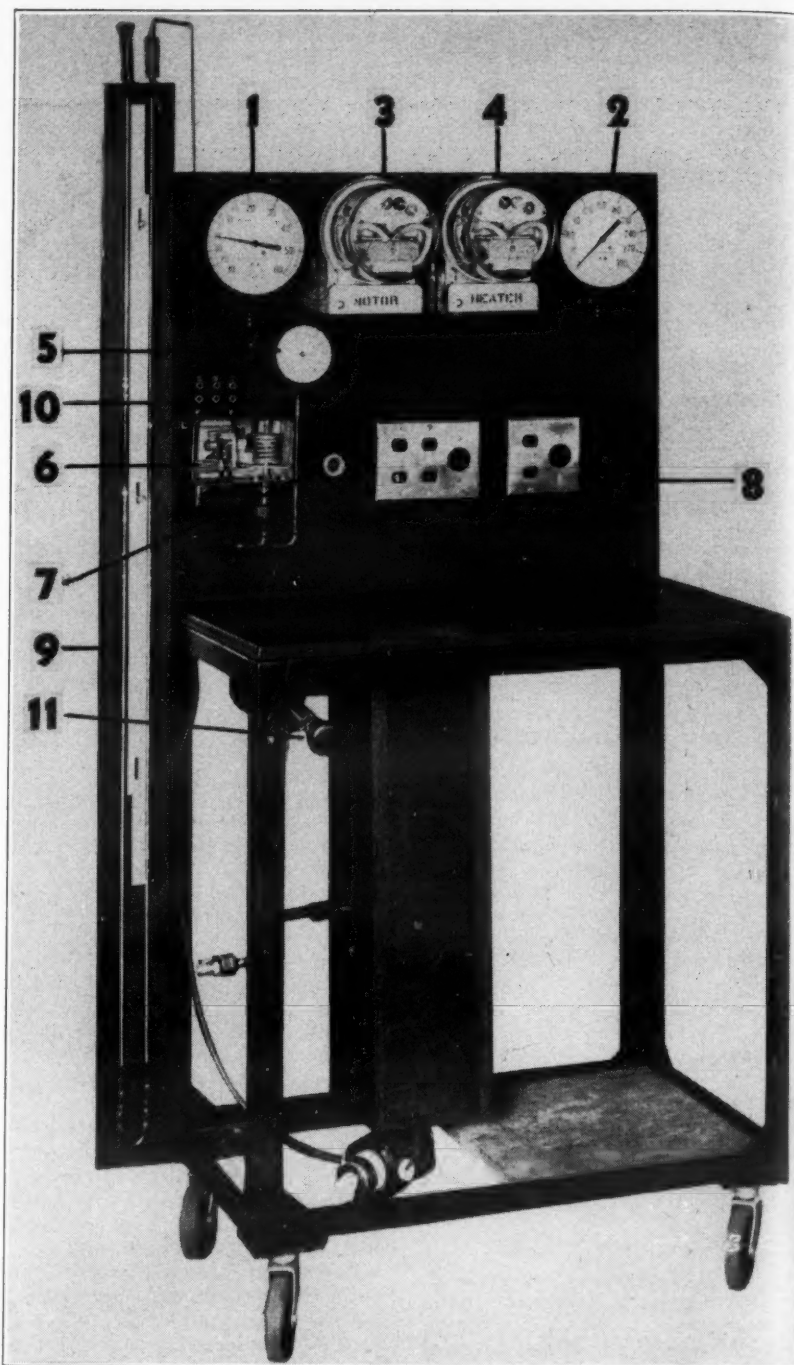
For some applications there would be a considerable advantage in using portable standards in place of the watthour meters. These standards are not only very accurate, but they can be read directly to a fraction of a watt. This is particularly important when testing small size compressors.

The potential coils of the watthour meters are connected through a double pole switch so that when the switch is closed both meters start simultaneously. Thus the input to the heater and motor is measured over identical periods and the meters are read before and after the run while they are not registering.

### WIRING DIAGRAM AND PRESSURE CONTROL

The wiring diagram shown in Fig. 4 provides complete control of

Fig. 1—New Portable Calorimeter



New-type portable calorimeter recently developed is shown above. Various instruments are numbered as follows: (1) suction gauge, (2) discharge gauge, (3) watthour meter for motor, (4) watthour meter for heater, (5) pressure gauge for secondary refrigerant, (6) pressure control for secondary refrigerant, (7) sight glass for liquid feed line, (8) control switches and plug receptacles, (9) mercury column for suction pressure, (10) thermocouple jack, (11) adjusting knob for expansion valve.

the apparatus, including plug-in receptacles for indicating wattmeter, voltmeter, and ammeter.

The pressure switch which controls the heater must have a small differential. The switch shown is of the conventional mercury tube type and can be adjusted to operate on about a 1-lb. differential.

### SAFETY FEATURES

In the event of failure of the pressure control, extreme pressure would be prevented by the thermally operated switch, which opens the heater circuit when the temperature of the heater well becomes higher than normal. This thermal switch also protects the apparatus in the event that the secondary refrigerant charge should escape. There is also a fusible plug to relieve excessive pressure, should it ever occur.

The suction gauge and the mercury column are protected against high pressure by constant pressure expansion valves in the connecting lines. These valves are arranged so that the inlet side of the valve connects to the instrument. When pressure rises to a predetermined point, the valve shuts and prevents further increase in pressure on the gauge or mercury column.

The original running in of the compressor can, if desired, be done on the calorimeter, the required conditions being maintained automatically, without attention, Mr. Wile explained.

After connecting up a compressor for test it is allowed to operate at least long enough to stabilize the temperature of the motor and compressor body.

The desired suction pressure is obtained by turning the expansion valve adjustment. Superheat of the suction gas is controlled by adjusting the pressure in the boiler by means of the pressure control.

Readings are taken of the watthour meters and then the test run is started by closing the recording

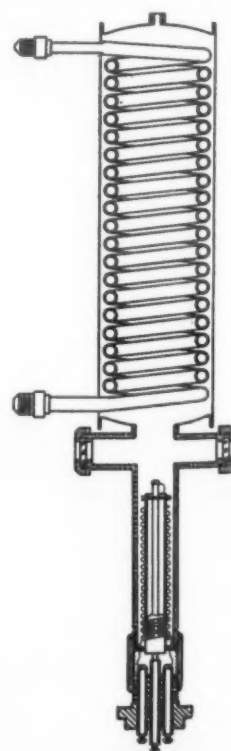
switch and starting a stop watch at the same time.

After sufficient time, the test run is terminated by opening the switch and stopping the watch. The new readings of the watthour meters are then recorded. The increase in meter readings multiplied by 60 and divided by the length of run represents the watt input to heater and motor.

### ERROR DUE TO INTERMITTENT OPERATION

The on and off operation of the heater causes its watthour meter to run intermittently. Each time the heater operates the meter records (Concluded on Page 17, Column 1)

Fig. 3—"Boiler"



Detail construction of the calorimeter cell or "boiler."

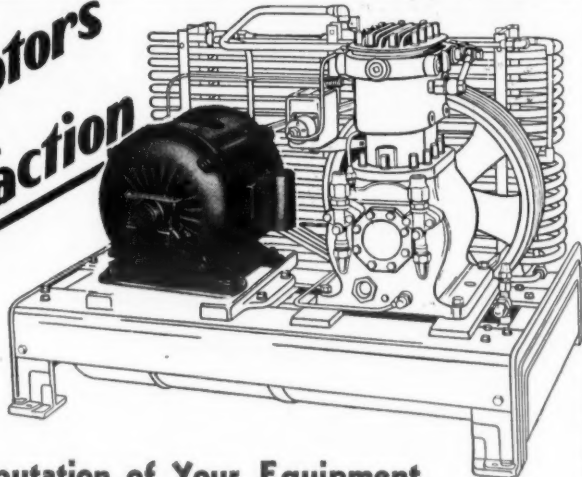


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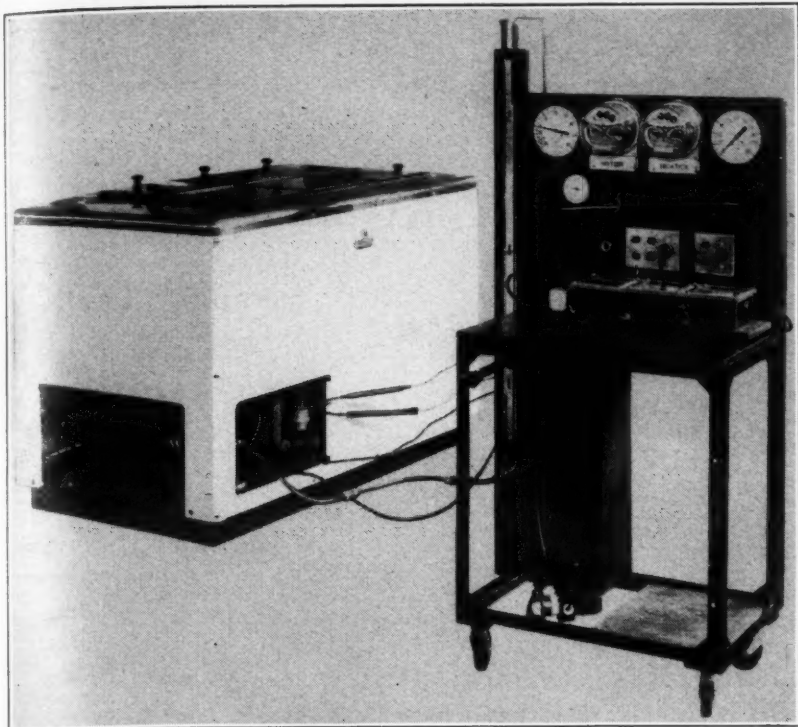
The complete line of Wagner single-phase and polyphase motors is fully described in 52-page Bulletin 177 on fractional horsepower single-phase and polyphase motors, 70-page Bulletin 182 on integral polyphase motors, and 18-page Bulletin 179 on integral single-phase motors. Ask for these bulletins.



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**Fig. 2—Testing a Compressor**



Portable calorimeter connected to compressor of ice cream cabinet to measure performance under actual operating conditions.

## 1% Error Is Claimed For Calorimeter

(Concluded from Page 16, Column 5) faster than the average input rate, the following off period balances this condition so that the reading then equals the average rate. Since a test run will not necessarily constitute an exact number of complete heater cycles there is always the possibility of a residual error due to the intermittent operation.

The test run must be long enough to reduce the percentage of the

high rate of input causes the cycles to become shorter and the total time required for the run remains the same.

The maximum error in per cent for any number of cycles and any heater ratio is expressed as follows:

$$E = \frac{100}{N} \frac{1 - R}{1 - R}$$

where E = Per cent error.

N = Number of cycles.

R = Ratio of heater operating time.

This equation can be rearranged to show the number of cycles required to reduce the possible error to any given amount.

$$N = \frac{100}{E} \frac{1}{1 - R} + 1$$

Since the per cent error is usually limited to a small quantity, the above equation can be simplified to:

$$N = \frac{100}{E} (1 - R)$$

It can also be shown that:

Length of off cycle = Total length of cycle  $\times (1 - R)$  and combining these last two equations we obtain the expression:

$$N \times \text{Length of total cycle} = \frac{100 \times \text{Length of off cycle}}{E}$$

or

$$\text{Total time of run} = \frac{100}{E} \times \text{Length of off cycle}$$

or

$$\text{Percentage of error} = \frac{100 \times \text{length of off cycle}}{\text{total time of run}}$$

or

$$\text{Percentage of error} = \frac{100 \times \text{length of off cycle}}{\text{total time of run}}$$

which indicates that for any calorimeter of this type the error due to intermittent operation depends only upon: (1) length of off cycle, and (2) length of run.

This relationship can also be established by another approach: The maximum error occurs when the test run starts at the beginning of a heater cycle and finishes at the end of a heater cycle. Then the residual error equals the excess B.t.u. stored in the calorimeter, but:

B.t.u. stored in calorimeter = Length of off cycle  $\times$  refrigeration rate and

$$E = \frac{\text{B.t.u. stored in calorimeter}}{100}$$

Refrigeration rate  $\times$  total time substituting:

$$E = \frac{\text{Refrigeration rate} \times \text{total time}}{100} \frac{\text{Length of off cycle}}{\text{Total time}}$$

residual error to a negligible amount, Mr. Wile stated. A simple rule has been developed to determine the length of run required for any calorimeter of this type.

Fig. 5 shows the manner in which the per cent error fluctuates during each heater cycle. The heavy dashed line represents heater operating periods. This particular curve is for a heater operating 50% of the time. During each cycle the error varies between zero and a maximum value which gradually decreases with each succeeding cycle.

Fig. 6 shows how the maximum per cent error of Fig. 5 decreases after continued operation.

If the run happens to start with a heater on cycle, the maximum error will always be positive, while if it starts with an off cycle it will always be negative. These two conditions produce an error which, of different sign, is of the same magnitude. If the run starts part way through an on or off cycle, the error may be plus or minus but will always be less in magnitude.

Furthermore, Mr. Wile declared, a high rate of heater input, resulting in a small per cent operating time, causes a larger error for any given number of cycles. However, it can be shown mathematically and tests also prove that, where the heater is designed for negligible heat lag, a

## Longer Run Reduces Amount of Residual Error

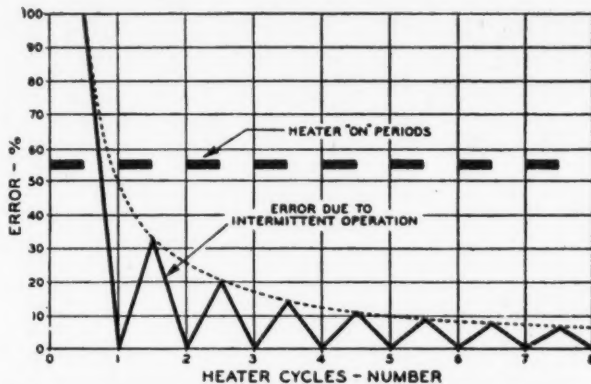


Fig. 5—Intermittent operation of the heater causes a certain amount of residual error in recording test runs. As shown in the graph, the percentage of error decreases as the length of run is increased.

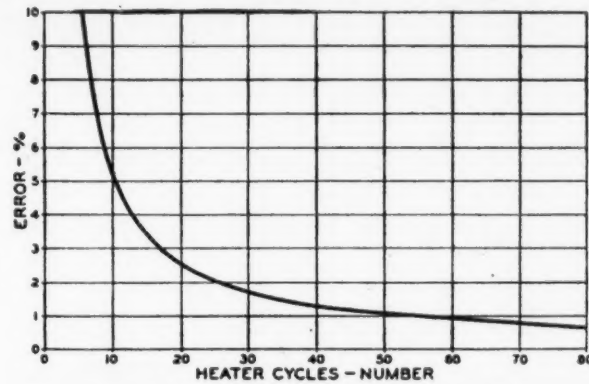


Fig. 6—The line graph above shows how the amount of residual error due to intermittent operation can be reduced to less than 1% if the test run is continued through a sufficient number of heater cycles.

Therefore, to determine the length of run required for any desired accuracy it is only necessary to measure the length of the off cycle and divide it by the required accuracy, Mr. Wile averred.

Since the length of the off cycle is directly proportional to the heat capacity of the calorimeter and inversely proportional to the refrigeration rate, it follows that the heat capacity should be kept small in proportion to the size of compressor to be tested.

### PERFORMANCE

Although the present unit was designed for a capacity of only 3,700 B.t.u. of refrigeration per hour, it appears evident from our observations that a considerably higher capacity could be obtained by merely

increasing the size of the electric heater and corresponding watt-hour meter rating.

Due to the large difference in temperature between secondary refrigerant and primary refrigerant, the rate of heat transfer through the evaporator coil is very rapid. When operating at 1,300 B.t.u. per hour the gas leaves the calorimeter only 2° colder than the boiler temperature.

There is no disadvantage in maintaining a higher boiler temperature, in fact it would reduce heat leakage under most conditions of operation. Consequently, from the standpoint of heat transfer, this calorimeter is capable of many times its present capacity.

"Pressure drop through the calorimeter coil is also an unimportant

factor, since we are interested only in the outlet pressure. We believe that the capacity could be increased several times without developing excessive pressure drop," Mr. Wile said.

With a refrigeration rate of 1,300 B.t.u. per hour, this calorimeter has an off cycle of somewhat less than two seconds and consequently a test should be continued for three minutes in order to reduce the intermittent error to 1%. It so happens that this much time would also be required to build up a sufficient reading on the watt-hour meters to insure equal accuracy.

Numerous tests have proven that with this rate of refrigeration a three minute run will produce results that check within 1% plus or minus, Mr. Wile concluded.

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# Locker Storages

## Profit & Cost Data For Locker Plants Shows That Urban Renters Spend More

AUSTIN, Tex.—A concise statement of facts and figures about the advantages of refrigerated locker plants to both plant operators and users of the lockers was given by A. A. Geiger of York Ice Machinery Corp. when he spoke before the Food Preservation Conference held at the University of Texas here this spring.

The advantages of a frozen food locker service plant to a rural patron, said Mr. Geiger, are:

He may slaughter any day of the year due to the chilling facilities of the plant and this will afford him an opportunity to replenish his locker supply often, thus assuring fresh and more palatable meats, and enabling him to utilize a minimum locker storage space.

He may get his meat supply at his own production costs plus locker rental and a nominal service charge. For the housewife it eliminates the drudgery and uncertain results of canning meats and some fruits and vegetables.

Advantages for an urban patron of the plant are:

He may purchase his meats for his locker through the custom butcher

at wholesale prices plus a small brokerage fee. Compared to what the same meat would cost if purchased through the regular retail channels, there is a net saving of from 7 to 10 cents per pound (locker rent and processing fee allowed).

If the renter is accustomed to buying the very best grade of meat, even greater savings will be effected, and in addition he will be assured of uniform quality.

Locker service offers the sportsman an opportunity to preserve and enjoy his fish and game over a longer period of time.

If any one thing may be deemed responsible for the rapid spread and development of frozen food locker service, it is the establishment of a custom butcher. He has much to do with the success or mediocrity of a plant, for it is he who meets the patrons, serves them, and keeps them satisfied. He is responsible for the sanitation of the entire plant and allows nothing to be placed in the lockers except what he himself puts there; in this way everything that goes into the lockers is properly chilled, wrapped, and frozen.

Recent surveys show that more

Table 2—Income From 260 Lockers

Renters	60%	70%	80%	90%	100%
100%—0%	\$4,056	\$4,732	\$5,408	\$6,084	\$6,760
90%—10%	4,185	4,860	5,534	6,208	6,882
80%—20%	4,274	4,987	5,700	6,412	7,124
70%—30%	4,384	5,114	5,849	6,576	7,306
60%—40%	4,493	5,242	5,990	6,740	7,488
50%—50%	4,602	5,369	6,136	6,903	7,670
40%—60%	4,711	5,486	6,282	7,067	7,852
30%—70%	4,820	5,624	6,425	7,232	8,034
20%—80%	4,930	5,751	6,573	7,394	8,216
10%—90%	5,039	5,879	6,718	7,558	8,398
0%—100%	5,148	6,006	7,064	7,622	8,580

than 17% of the plants are merchandising a complete line of packaged frozen fish, fruits, and vegetables. These they sell at wholesale price to their locker patrons in lots of 10 packages or more to be stored in the individual lockers for future consumption.

This merchandising of frozen packaged foods and the broker service offered by the custom butcher, in addition to the savings of a locker service, are the chief contributing factors to the increase of urban patrons and those farm patrons who do not raise their own meat supply.

"I have watched and been active in developing frozen food locker service plants in the states of Iowa, South Dakota, Nebraska, Ohio, Kentucky, West Virginia, Virginia, Maryland, New Jersey, Pennsylvania, New York, and all of the New England states," said Mr. Geiger.

"In the light of my experience in opening new territories I have found that an idea as entirely new as the individual family locker is, at first, looked upon a bit skeptically.

"The inevitable question is, 'Will the locker idea go over in my community?' But this natural resistance can be overcome. What has

Table 3—Income From 500 Lockers

Renters	60%	70%	80%	90%	100%
100%—0%	\$7,800	\$9,100	\$10,400	\$11,700	\$13,000
90%—10%	8,010	9,345	10,680	12,015	13,350
80%—20%	8,220	9,590	10,960	12,330	13,700
70%—30%	8,430	9,835	11,240	12,645	14,050
60%—40%	8,640	10,080	11,520	12,960	14,400
50%—50%	8,850	10,325	11,800	13,275	14,750
40%—60%	9,060	10,570	12,080	13,590	15,100
30%—70%	9,270	10,815	12,360	13,905	15,450
20%—80%	9,480	11,060	12,640	14,220	15,800
10%—90%	9,690	11,305	12,920	14,535	16,150
0%—100%	9,900	11,550	13,200	14,850	16,500

Table 4—Total Yearly Operating Costs

Items	260 Capacity	500 Capacity
Power and Water—\$2 per locker per year.....	\$520	\$1,000
Depreciation—8%—\$8,500 .....	680	8%—\$16,000 1,280
Taxes and Insurance—5%—\$5,000 .....	250	5%—\$9,600 480
Labor—first man (\$100 per month).....	1,200	(\$150 per mo.) 1,800
Extra Help .....	300	1,200
Paper, Twine, and Stationery .....	100	200
Lights, Heat, and Incidentals .....	150	240
<b>Total .....</b>	<b>\$3,200</b>	<b>\$6,200</b>

been found to be of real value to 1,000,000 people in 36 states will prove its worth to the remaining states."

With respect to the advantages to the plant owner, Mr. Geiger has prepared a series of tables which show gross income, operating costs, and profits of a locker system. (These are not actual figures for any one plant, but are based on field experience.)

Table 1—Profit Analysis For 260 & 500-Capacity Plants

(Income Per Locker Per Year)	Rural	Urban
Rental Charge .....	\$12.00	\$12.00
Processing Fees .....	12.00	9.00
Brokerage Fees .....	2.00	12.00
<b>Total .....</b>	<b>\$26.00</b>	<b>\$33.00</b>

Several recent surveys of all locker plants in United States show that rural families are using 75% of all lockers and urban families 25%. These surveys also show that 75% of all lockers installed are rented.

Based on these figures, the following returns may be expected:

260 Capacity	500 Capacity
Gross Income per Year (Table 2).....	\$5,412
Less Operating Costs (Table 4)....	3,200
<b>Net Returns .....</b>	<b>\$2,212</b>
	26%
Gross Income per Year (Table 3).....	\$10,406
Less Operating Costs (Table 4)....	6,200
<b>Net Returns .....</b>	<b>\$4,206</b>
	26%

"From actual data secured from operating plants installed by our organization, we have estimated that the total investment for a complete locker plant, including building, insulation, refrigerating equipment, lockers, and processing equipment (but not the building site), varies from \$27.50 to \$35.00 per locker," said Mr. Geiger.

"In our analysis, we have assumed that the average rural locker renter will use 800 lbs. of meat per year, and the urban renter 600 lbs. We have allowed a processing fee of 1½ cents per pound and a brokerage charge of 2 cents per pound. This brokerage charge is made only when the supply of meat for the locker is purchased by the custom butcher for the patron.

"The investment returns shown on the analysis chart are based on 100% rental occupancy. Of course, this is not likely the first year of operation, but an 80 to 90% occupancy is not uncommon even in the first year. This is especially true if the size of the plant is kept down to where it will properly serve the needs of the community and if a reasonable effort is made to familiarize the community with the economy of using lockers.

"By comparing the total income per locker from urban and rural renters, it becomes obvious that a greater return is received from the urban patron; this is due to the fact that the urbanite must rely upon the purchasing service of the custom butcher, whereas the farmer produces most of his own supply of meat.

"As the locker users become familiar with the advantage of purchasing and storing frozen fruits and vegetables, the income from brokerage fees from patrons will increase, for the custom butcher or plant owner will purchase these items if this service is desired.

### INDEPENDENT LOCKER PLANTS PROFITABLE

"It has been erroneously stated and printed that locker plants independent of another business cannot be profitably operated. The above chart shows that a 260-capacity plant is highly profitable as an independent enterprise. At least 60% of the plants installed by our organization within the last four years have a capacity of less than 300 lockers and are producing satisfactory returns to their owners."

### New Insulation Designed For Locker Plants

ST. PAUL—A new insulation product, designed for use in locker plants and similar refrigerated construction, is being marketed by Wood Conversion Co. under the name of "Nu-Wood" sealed cold storage insulation.

The insulation consists of units of Nu-Wood insulation board having a continuous double coating of waterproof asphalt on all surfaces and edges, to render it highly resistant to moisture or moisture vapor. Product is so designed that it can be readily used by the cold storage applicator, carpenter, or even by mechanics of less experience.

Total thickness of insulation required in cold storage rooms usually varies from 3 to 8 inches, depending on the temperature difference inside and outside of the room. To eliminate continuous joints through the insulation, Nu-Wood insulation is designed so that it can be placed in two or more separate staggered layers. Size conforms to standard construction 16 inches on center.

First layer is placed between wood nailing strips, and the second layer is placed directly in contact to the first, and is nailed to the strips. Each layer is set in emulsified asphalt adhesive, and the entire surface can then be finished with a trowel coat of emulsified asphalt mastic or metal lath and plaster. Similar type of construction is designed for floors.

The insulation is available in blocks 1½, 2, 3, and 4 inches thick, measuring 14½ x 32 inches.



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In order to reach other markets, manufacturers frequently go into other publications. Thus "the list" is made up for their advertising and promotion plans.

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# Installation Methods

## From Box Car To Farmer's Refrigerator



How the interior of the old refrigerator car was equipped to provide suitable storage for a farmer's perishables awaiting shipment to market. Note the placement of the forced-draft cooling units and the manifold, which permits operation of only a single blower when desired.

## Old Railroad Car Storage Box For Farm Produce Designed To Give Low-Cost Refrigeration

ST. LOUIS—With an old railroad box car handy and a yen for "sellin'" commercial refrigeration, H. S. "Woody" Woodard, St. Louis Frigidaire commercial refrigeration dealer, had no difficulty solving a problem of two St. Louis county truck farmers—that of keeping their vegetables fresh while waiting for trucks to load and carry the produce to the Chicago market.

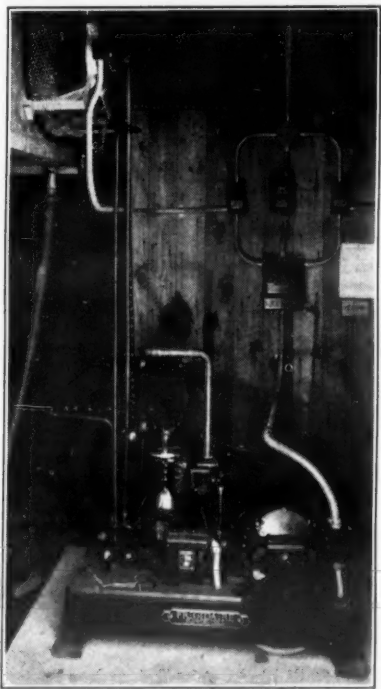
The farmers are Charles and Jack Warmann, 8900 Jennings Road, St. Louis county, Mo. The cooler installed on their place (interior of which is shown in Fig. 1) is an old refrigerator car mounted on a concrete base. Four inches of mineral wool insulation was added to the sides, and 8 inches of the same insulation added to the top of the cooler to supplement the 4 inches of hair felt with which the car was originally insulated. The additional insulation, states Mr. Woodard, is to reduce the sun load.

Refrigeration equipment is composed of three C-820 forced-draft Frigidaire cooling units, one FE-6J Frigidaire condensing unit, one EC-2 Frigidaire evaporative condenser, and one Superior 3HE-610S heat ex-

changer manifold. "Freon-12" is used. Mr. Woodard engineered the job, and the installation was made by Sherman Frazier, veteran St. Louis refrigeration service engineer of the City Refrigeration Service Co.

Conditions maintained in the cooler

### Shed Installation



Refrigerating machine for the converted railway car is installed in a shed just outside. Note evaporative condenser in upper left-hand corner.

are a 40° F. dry bulb temperature and a relative humidity of 85%. At times the cooler may be required in one handling to cool as much as 5 tons of vegetables from field temperatures to 40° F.

The condensing unit is housed in a shed just outside of the cooler, and condensing water is supplied by an evaporative condenser (see Fig. 2).

Another feature of the installation is the use of the Superior manifold with a built-in heat exchanger, located inside the cooler. The user may close the valves to any one or more of the blower units when refrigeration is not required in certain parts of the refrigerator. The built-in heat exchanger protects the compressor from liquid slugs and prevents frosting of the suction line outside the refrigerator.



## Approved Model Safety Code Specifies Kind Of Tubing, Joints & Pressure Relief Devices

(Concluded from Page 1, Column 1) deal with code matters known as the Joint Refrigeration Industry Committee. Members of this committee were drawn from the Refrigeration Division of National Electrical Manufacturers Association, from the Air Conditioning Manufacturers Association, the Refrigerating Machinery Association, and the Compressed Gas Manufacturers Association.

On this committee served some of the major executives of the industry, and it was in the meetings of this committee that some of the more controversial points in the original proposed revision were threshed out.

### CONSULTED CITY OFFICIALS

It was the JRIC committee that succeeded in getting together the municipal safety officials from New York City, Chicago, Detroit, and Washington, D. C., first in an intensive session at a resort hotel on the Jersey coast, later in the regular meetings which the committee held around the country.

These sessions were the difficult ones, as each municipal official stood firm for his own pet ideas about what safety measures should be stipulated, and the industry group fought against what they thought were restrictive measures based on "the inherent suspicion of the coincidence of remote possibilities" to quote a phrase coined by Donald French, Carrier Corp. vice president and a member of the JRIC committee.

### NOT RETROACTIVE

Section 1 of the model code says that its regulations "shall apply to refrigerating systems installed subsequent to its adoption and to parts replaced or added to systems installed prior to its adoption." It would thus not be retroactive.

Section 3 groups the types of places used for human occupancy which may be equipped with mechanical refrigeration, in accordance with the nature of the human occupancy. Section 4 classifies the various refrigerating systems by type (direct expansion, indirect closed surface system, double indirect vented open spray system, etc.), and section 5 classifies the refrigerants into three main groups. The "Freon" refrigerants, Carrene No. 1, and carbon dioxide are in Group 1, ammonia, methyl chloride, and sulphur dioxide in Group 2, and the butanes and propane in Group 3.

Sections 6, 7, 8, and 9 define institutional occupancies, public assembly occupancies, residential occupancies, and commercial occupancies, respectively, and the types of systems that can be used for each of the various types. Places in which persons are harbored or confined are subjected to the most stringent safety rules. Places where a large number of persons may congregate and where the panic hazard is high are subject to slightly less rigid rules because the persons are relatively free to act in cases of emergencies.

### LIMITATIONS ON REFRIGERANT

For public assembly and commercial occupancies a limitation is placed on the amount of Group 1 refrigerants (the only ones permissible in direct expansion systems), the limitation being by volume of the space to be air conditioned as specified in tables published in the code.

Restrictions are placed in the code against carrying refrigerant piping through floors, unless it is enclosed in an approved, rigid and tight continuous fire-resisting flue or shaft.

Each refrigerating machinery room shall be provided with means for ventilation to the outer air, the code provides. If a duct-type ventilating system is to be used, it must conform to the specifications set forth in the code.

Soft annealed copper tubing used for refrigerant piping erected on the premises shall not be used in sizes larger than 3/4-inch nominal size, says the code. Joints on annealed copper tubing not exceeding 3/4 inch in outside diameter may be made with flared compression fittings of approved type, provided that all such fittings shall be exposed for visual inspection.

### ABOUT JOINTS

Joints on hard drawn copper tubing, the code further provides, if of the sweated capillary type may be made with an alloy having a melting point greater than 1,000° F. or with a solder melting at a point below 500° F., but above 350° F.

A further provision says that soldered joints in pipe or tubing erected on the premises shall remain mechanically intact when subjected to a pull-apart test equivalent to a pressure of not less than 300 lbs. per square inch gauge pressure with a temperature of not less than 800° F., except that this requirement shall

not apply to soldered joints in pipe or tubing of 1/2-inch nominal size or smaller when used in systems containing not more than 20 lbs. of refrigerant.

The code provides that stop valves shall be installed on all systems containing more than 20 lbs., but less than 100 lbs. of refrigerant, at locations as follows: (a) each inlet and each outlet pipe of each compressor; (b) each outlet of each liquid receiver.

According to the code, refrigerant containing vessels (which means generally liquid receivers) which are not a part of equipment listed by a recognized engineering testing laboratory having a follow-up inspection service, shall be constructed in accordance with the rules of Section VIII (unfired pressure vessel section) of the 1937 A.S.M.E. Boiler Construction Code, except that compliance with paragraphs U-2 to U-10 inclusive and U-65 and U-66 of the aforesaid A.S.M.E. Code shall not be required.

The code provides that each pressure vessel containing liquid refrigerant and which may be shut off by valves from all other parts of a refrigerating system, shall be protected by an approved pressure relief valve in parallel with a rupture member or a second approved pressure relief valve if its gross volume exceeds 5 cu. ft. unless its diameter does not exceed 6 inches. Each pressure vessel having a gross volume of 5 cu. ft. or less, containing liquid refrigerant and which may be shut off by valves from all other parts of a refrigerating system, shall be protected by an approved pressure relief device or an approved fusible plug.

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They know that the remarkable durability of the Sylphon Metal Bellows assures long, trouble-free life in the mechanisms in which they are used... keeps their products sold and minimizes service problems. Investigate! Avail yourself of the engineering services we offer freely for the solution of specific problems. Ask for Bulletin LO-121.

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Representatives in All Principal Cities in U. S. A. and in Montreal, Canada and London, England

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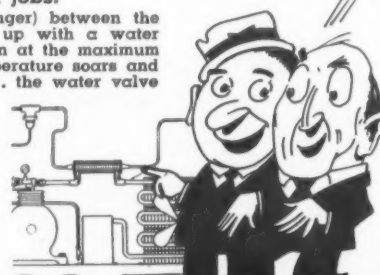
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Install a SUPERIOR ECONOMIZER (Heat Exchanger) between the compressor and air-cooled condenser. Hook it up with a water valve, as illustrated. Set the water valve to open at the maximum desired head pressure. Then... when the temperature soars and head pressure would normally ring the bell... the water valve opens, admitting just enough water to the Economizer to keep the head pressure down to normal and the capacity up to par. Uses water only during peak load conditions, and then, very little.

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Efficient, sturdy, easily and quickly applied.  
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For Walk-In Coolers  
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Niagara Type X Fan Coolers, air conditioners, aero condensers bring advantages of centrifugal fan and spray pump performance to models of ½ ton capacity and up, provide lower cost of installation and operation in food process and storage, cooling and comfort air conditioning. Write for Bulletin No. 76.

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**FAN COOLER**

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With increased capacity. See your local jobber.

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A completely new display case of welded steel construction. Porcelain clad. Lined with porcelain and stainless steel. Four inch insulation. American Royal cases are only part of the extensive KOCH line, which includes display cases in every price class for any store in any climate.

**KOCH Refrigerators**  
North Kansas City, Mo.

## Air Conditioning

### Kinds of Gas Air Conditioners Now on the Market & Applications For Which They're Best Fitted Described At A.G.A. Meeting

TULSA, Okla.—"The time has arrived when every natural gas company should go after the summer air-conditioning business as aggressively and as progressively as it does house heating," declared Charles R. Bellamy, speaking before the American Gas Association convention here last month.

Mr. Bellamy, who is chairman of the A. G. A. air-conditioning committee, reported that air conditioning did not "lead us right out of the depression," because of the fact that living standards are closely related to income, and when incomes are low improvements of this nature are regarded as luxuries.

In spite of the fact that the expected "boom" in air conditioning failed to come off, Mr. Bellamy cited the fact that the industry has had a slow, steady growth, from a gross business of 10 million dollars in 1931 to approximately 90 million dollars in 1938.

#### COMMERCIAL MARKET BEST

Mr. Bellamy has found that the largest present market for air conditioning lies in the commercial field. With less than 25% of the large department stores equipped with air conditioning and only 10% of the larger restaurants, the speaker indicated that there are 3,000 department stores that are excellent prospects and some 19,000 restaurants.

Also included in the "commercial" field are stores, shops, theaters, hotels, hospitals, schools, and churches.

The second best market at this time was found by Mr. Bellamy to be the industrial field.

Mr. Bellamy believes that progress in the commercial and industrial fields will accelerate acceptance of air conditioning in the residential market, which at present is "only a fraction of the potential market."

#### EQUIPMENT MUST BE SOLD

Citing the position of the natural gas utility in relation to air conditioning, Mr. Bellamy said that "new capital is needed to develop markets. Here is where the gas utility can step in and help. Gas air-conditioning equipment does not sell itself. It has to be sold, and I think our experiences with house heating and refrigeration proves conclusively that successful merchandising of gas requires the wholehearted backing of the local gas utility."

"To put gas air conditioning across, gas companies are going to have to participate with the manufacturers in a campaign of intelligent advertising and sound salesmanship. All this will cost money, but it should be money well spent, for the summer air-conditioning load is the perfect supplement to our house heating business."

Because "gas equipment lends itself particularly well to the control of humidity," Mr. Bellamy believes that recent trends in research which show the importance of this factor in air conditioning are of great interest to the gas industry.

Mr. Bellamy cited work that has been done at Corey Hill Hospital, where the A. G. A. is one of the sponsors of research carried on there this year. Studies made there have indicated that a warm dry atmosphere is considered the best treatment for rheumatic fever and other ailments.

#### NEW DEVELOPMENTS

"The 1938-39 developments in gas-fired air-conditioning equipment have been altogether favorable," Mr. Bellamy said. Of particular importance to the gas industry is that certain types of dehumidifying equipment have now reached the "package equipment" stage.

"The Kathabar equipment using lithium chloride was until approximately a year ago custom built for each job. This meant high cost for equipment as well as high engineering cost for the installation. Within the past year, however, the equipment has been re-designed and greatly improved. The new design calls for standard cells for contactors, each cell having a rated capacity of 2,500 c.f.m. of air and being approximately 26 inches wide by 36 inches high and 31 inches in depth.

"These cells are now nested in frames, similar to filters, and in that manner build up to provide a system for any desired capacity. The compactness of the new design is such that the space requirements have been materially reduced; in fact in many situations the new equipment will require less than half as much space as the old design. Thus it has been possible to reduce the price of the Kathabar unit and likewise the cost of installation.

#### KATHABAR PACKAGE UNITS

"In addition a new series of Kathabar package units is being put out ranging in capacity from 2,500 c.f.m. to 6,000 c.f.m.; these units being designed to give maximum performance at a low overall cost.

"The Bryant Heater Co. of Cleveland recently introduced to the gas industry a new series of dehumidifier radically different, mechanically, from their former models. They are similar in two respects only; gas is used as the primary source of energy, and Silica Gel is used as the adsorbent, or moisture extracting material.

"The Silica Gel is held in a cylindrical basket made up of two concentric cylinders of wire screen, one of which is 2 inches less in diameter than the other, thus making the Silica Gel 1 inch thick. The diameter and length of the basket vary with the air capacity of the machine; for instance the No. 6 model has a basket 25 inches in diameter, 24 inches long, and the No. 14 model has a basket 50 inches in diameter and 24 inches long.

#### SILICA GEL OPERATION

The Silica Gel basket is placed in the machine in a horizontal position, i.e. the principal axis is horizontal. It rests upon two shafts, which are parallel to the axis of the basket, and these shafts in turn are supported on ball bearings attached to the base of the machine.

"The supporting shafts are turned by a small electric motor having a suitable gear reduction; the shafts in turn cause the basket to rotate. One revolution of the basket takes 9½ minutes.

"Since two distinct air streams must move through the gel basket concurrently, slip seals are provided to keep these air streams separated. The dry air stream utilizes 210° of the arc of the basket, while the activation air utilizes 150° of the arc. Furthermore, the activation air is divided by an additional seal into two portions, the larger portion being heated by the gas flame, and the smaller untreated room air for cooling purposes. The heated air uses

120° of the activation arc, cooling air 30° of this arc.

"Each air stream has its own fan, ranging from ¼ hp. on the smaller units to 2 hp. on the large machines."

The machines are continuous in every respect and gas burns all the time they are in operation.

"While the air is being dried by one portion of the rotating gel basket, the other portion is being activated and cooled. The activation air is heated to about 325° F. before it enters the gel to drive out the adsorbent moisture. The leaving temperature of air is about 150° F."

#### RE-SATURATING COOLING

With the new Bryant units "re-saturating cooling" may be used. This consists of using extremely dry air, cooling this air in the air-dry cooler with whatever water is available, and then spraying water back into the over-dried air.

"The evaporation of water into this air will lower its temperature, but not enough water is added to nullify the drying effect on the conditioned space. Thus, with re-saturating cooling added, the industry has a complete cooling and dehumidifying unit, competitively priced, which still incorporates inherently in a large degree the great advantage of independent temperature and humidity control."

#### WILLIAMS AIR-O-MATIC

Mr. Bellamy stated that the "first gas-fired absorption refrigeration process for air conditioning to be placed on the market is that manufactured by the Williams Oil-O-Matic Heating Corp. and called the Williams Air-O-Matic refrigeration unit.

"The refrigerant used in the Air-O-Matic is methylene chloride and the solvent is dimethyl ether or tetraethylene glycol. Both substances are said to be essentially non-toxic, non-irritant, non-corrosive, chemically inert, and chemically stable.

"One of the features of the Air-O-Matic apparatus is its inherently low working pressure. The low side pressure in this machine will ordinarily be within the range of 21 to 24 inches mercury vacuum and the operating high side pressure within a range of 3 inches of vacuum to 4 lbs. gauge.

"The four parts of this machine are (1) absorption unit, to provide refrigeration for comfort cooling, (2) water-cooling equipment, to dissipate heat liberated by the absorption machine, (3) air-distribution unit, to provide air circulation, positive ventilation, air cleaning, and (4) control system, to regulate temperatures in the conditioned space.

#### SERVEL AND MILLS

"Some time during the year it is expected that two other companies, namely, the Mills Novelty Co. and Servel, Inc. will have important announcements to make regarding new gas-fired absorption refrigeration equipment for air conditioning. Both of these companies have been carrying on extensive experimentation along this line for some time and are now making practical field tests on their air-conditioning machines.

"The Mills gas-fired absorption refrigerator is a novel application of the well-known ammonia evaporation-absorption cycle. It performs the two functions of this cycle without mechanical devices or moving parts, by means of pressure differentials and gravity. For the present the capacity of this machine is rated at 18,000 B.t.u. of refrigeration effect per hour. One of the interesting objectives of the builders is to produce a low-cost unit suitable for air conditioning not only medium but small-sized homes.

"The new Servel unit is intended for all-season air-conditioning purposes, that is, heating and ventilating, ventilating only, and cooling and ventilating at the choice of the user. Very little publicity has been given to this development so far, but the Servel company has made an installation in the Good Housekeeping Model Home at the New York World's Fair and is planning some field installations this summer.

"In the Servel unit cooling is obtained by using a closed absorption refrigeration unit in which the refrigerant is water and the absorbent lithium chloride solution. The unit is hermetically sealed and there are no moving parts in the refrigerating system. Since water is the refrigerant the unit operates at a high vacuum. The generator is heated by steam from a gas-operated atmospheric steam producer."



## Foreign News

### Expansion of Market In South Africa Means More Sales For U.S. Exporters

**Absence of Import Duties Holds Cost Down; Freight Charges Are Outstanding Item of Expense**

DETROIT—With increasing public acceptance and demand, refrigeration is rapidly coming into its own as an established factor in the modern life of the Union of South Africa, said Joseph Katzen, manufacturers' representative in Johannesburg, during a visit to the offices of AIR CONDITIONING & REFRIGERATION NEWS recently.

As South African representative for Sparks-Withington Co., maker of Sparton refrigerators and radios, Mr. Katzen is thoroughly familiar with the refrigeration field. He also is representative for other lines of radios, radio parts, and other appliances, and for Winchester Repeating Arms Co.

"It is really remarkable," Mr. Katzen pointed out, "that with a white population of only about 2,000,000, South Africa is the largest refrigerator export market for the United States. Last year South Africa bought about 20,000 refrigerators from America, and in 1937 bought approximately 30,000."

"Along with Great Britain, Canada, and Brazil, South Africa also is a leading buyer of American commercial refrigerators and refrigerator parts."

"The South Africans are now demanding refrigeration, particularly commercial equipment in stores, restaurants, and 'milk bars' or soda fountains."

#### NO MACHINERY MADE

"A few companies are making commercial refrigerator cabinets on a custom-built basis, with nothing like line production. There are no household refrigerator factories, and no refrigerating machinery at all is made in South Africa. Practically everything is imported, and as there are no import duties on refrigerators, the cost is kept well down."

Mr. Katzen explained that it would not be worth while setting up factories in South Africa to produce refrigerators under the present conditions because such a move would be much more expensive than importing the units. Refrigerators may be brought into the country completely assembled, he said, with no import duty applying. Thus it is not even necessary, as in some other countries, to import parts and reassemble them into units.

The only outstanding item of expense involved in the importing of refrigerators is the freight charge, Mr. Katzen explained. Shipment of

equipment in the United States from factory to port, plus shipment across to Capetown or some other South African port, plus shipment from this port to the final destination in South Africa, amounts to a considerable cost.

The question of air conditioning has more to do with humidity than either cooling or heating, Mr. Katzen said. In the cities of the interior highlands, such as Johannesburg, the climate is, on the whole, quite comfortable the year around. The main problem is the dryness of the air in the higher atmosphere, so that humidification is the principal requirement.

In the coastal cities, such as Durban, the temperature is about the same as on the plateau, but the humidity is so very much higher that at times it is quite uncomfortable. Under these conditions, therefore, dehumidification is the requirement.

Unit air conditioners, for rooms, offices, and stores, would be most in demand, Mr. Katzen believes.

South Africa's population, Mr. Katzen said, is composed of about 2,000,000 whites and 6,000,000 blacks. The white element has almost all of the wealth, he pointed out, and comprises the refrigeration market.

#### BLACKS AID REFRIGERATION

However, the blacks are indirectly responsible for the growth of refrigeration, because those who live in the cities and towns are being taught to like ice cream, beverages, and other foods which require refrigeration. Thus, as the blacks consume more and more of these foods, more and more refrigeration equipment is needed.

Mr. Katzen, American born and bred, went to South Africa about twelve years ago, having married a girl from Johannesburg. He has made it a point to return to the United States for a visit about every five years, he declared.

South Africa's prosperity, he said, depends directly upon the United States, since the latter is the dominion's greatest market for gold and diamonds.

America is now buying practically all of South Africa's gold, whether direct or from other countries which in turn have bought from South Africa.

"It seems really funny to me," Mr. Katzen said, "that gold is dug out of the ground in South Africa, shipped to America, and buried in the earth again down in Kentucky. America has almost all of the world's gold supply right now, and when it has all of it, the rest of the world is just going to say, 'All right, you've got it all; now just sit on it and we'll use something else.'"

#### DIAMOND PRICES

"It's an interesting thing about diamonds, too. The United States is, in the end, the main buyer of South Africa's diamonds. But if the price is not good enough, the South African diamond firms just store the precious stones in their vaults and wait for the price to go up."

"Or, the diamonds are shipped to Europe, where most of them go first anyway to be cut, particularly to the Netherlands, and are held there by the cutting companies until the American price suits them."

If England gets involved in another war, Mr. Katzen said, South Africa probably will go in on her side the same as in the last war. It is to South Africa's advantage to do so, he explained, because the mother country has a very protective navy, has untold wealth, is economically sound, and is a "very fond mother to loyal and dutiful children."

All the dominions of the British Empire are, of course, self-governing and can decide for themselves whether or not they want to go to war, Mr. Katzen pointed out.

### More Refrigeration For China Seen as Japanese Enter

TIENTSIN, China—Influx of Japanese residents to North China may increase the demand for mechanical refrigeration equipment in this country, in the opinion of Harry Fuchs, owner of the "Rin-Tai" Refrigerator Mfg. Co., only manufacturer of electric refrigerators in China.

Natives of Tientsin and its surrounding areas are not as yet refrigerator-minded, Mr. Fuchs reports, and at present the company's annual refrigerator output is less than 1,000 units. Japanese citizens, however, are more inclined to adopt modern equipment, and he believes their entry into the country may bring an increase in sales.

Models of the "Polar" line, as it is called, manufactured by the company range in capacity from 4 to 7 cu. ft., and in price from \$500 to \$750. All parts, except motors, are made in the company's own factory. The latter are imported from the United States.

A shelf-storage arrangement on the cabinet door is a feature of all models, and on the deluxe units a dry-storage base compartment also is provided. Evaporator on the smaller models is set against the upper left side of the cabinet interior; in the deluxe model it is centered, as in American-made machines.

Striking similarity of sales appeals to those used in the United States is shown in these excerpts from some of the company's promotional literature:

"Polar is a definite insurance against the ill-health of your family, your little ones. It preserves your food in vitamin-fresh condition, and prevents contamination of any and every kind."

"Your favorite beverage, Polar-stored, will taste better. Your fruit, butter, eggs, vegetables, and a dozen other commodities of daily life will taste sweeter, fresher."

Special features pointed out in the company's literature include low cost of operation, quietness of operation, dependable and service-free operation, automatic temperature control, current control, easy-opening door, automatic interior light, double-plated copper shelves, and speedy ice cube delivery.

Models are offered in "different finish of all appealing colors," and each unit has a free service guarantee of two years.

#### Key Specifications of 'Rin-Tai' Refrigerator

Model No.	RT1001	RT1938
Storage Capacity (cu. ft.)	6.0	6.0
Shelf Area (sq. ft.)	7.6	8.75
Door Basket Cap. (cu. ft.)	0.6	0.6
No. of Shelves	3	3
No. of Door Baskets	4	4
Ice Trays	3	4
No. Cubes per Freezing	63	84
Pounds of Ice	4	6
Height (inches)	55½	61
Width (inches)	26	28
Depth (inches)	21	23

Exterior finish: Dulux (both models). Interior: Dulux (both models). Compressor: 1 cylinder. Condenser: continuous fin tube type. Motor: ¼-hp. General Electric. Evaporator: Polar. Control: automatic temperature control. Ice trays: stamped aluminum. Motor speed: 1,425 for 50 cycle. Refrigerant: sulphur dioxide.

## THE BUYER'S GUIDE

**TYLER** *The Original WELDED STEEL Commercial Refrigerators*

#### NEW 1939 FEATURES

Tyler's original welded steel construction is still the most advanced in the commercial refrigeration field. And the 1939 line is the greatest ever. New improvements include wider doors, for greater accessibility; wider front glass for increased visibility and new, patented NON-GLARE lighting system for brighter display.

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Complete line covers wide field. Built from experience with thousands of installations. Offers sensational values because of standardized quantity production. You can meet today's demands with Tylers and make more money. Write NOW for dealer proposition.

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TYLER FIXTURE CORP. Dept. R, NILES, MICH.

**QUALITY**  
NATIONALLY ADVERTISED LINES  
OF QUALITY MERCHANDISE

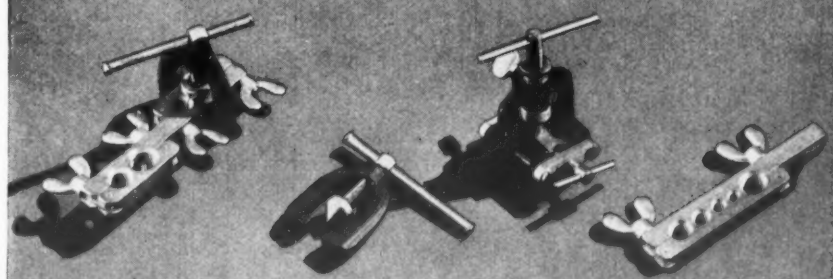
Send for our big catalog. It's FREE TO YOU if you write on your letterhead. We only sell wholesale. You'll find it contains only quality merchandise and complete stocks, too, of all  
**AIR CONDITIONING and REFRIGERATION**  
PARTS, SUPPLIES and EQUIPMENT

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NEW YORK DETROIT CLEVELAND ST. LOUIS  
161-163 Grand St. 5013 John R. St. 4506 Prospect Ave. 2910 Washington Ave.

### Imperial Flaring Tools

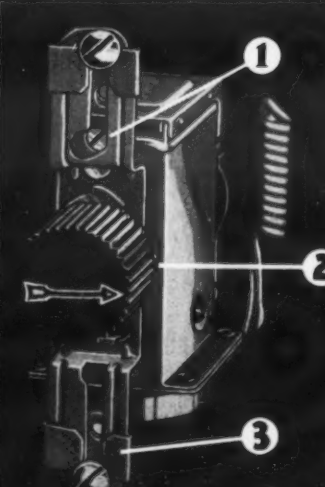


With an Imperial flaring tool you make exactly the right type of S.A.E. flared joint so that you can be absolutely certain of a tight connection. Self centering yoke. No danger of cracking or splitting tube.

Equip yourself with one of these inexpensive flaring tools for handling copper, brass or aluminum tubing work. Ask your jobber for complete information or write for catalog.

THE IMPERIAL BRASS MFG. CO., 565 S. Racine Avenue, Chicago, Illinois

**IMPERIAL** Air Conditioning and Refrigeration Products  
VALVES • FITTINGS • TOOLS • CHARGING LINES • FLOATS • STRAINERS • DEHYDRATORS



### RJS-830 Offers All of These IMPORTANT FEATURES!

THIS small, sturdy, precision-built general replacement control - which fits the majority of new model household refrigerators having overload protection built in the motor - gives you these outstanding advantages: -

1. Outside Differential Adjustment
2. Adjustable Dial Pointer
3. Adjustable Mounting Brackets

Easily and quickly installed. Low priced. Completely dependable.

**Ranco** INC.,  
Columbus, Ohio, USA

### BUNDY TUBING

Copper-Brazed Steel. Copper Coated Inside and Out. Sizes: ¼" to ¾" O.D.

BUNDY TUBING CO., DETROIT



Manufacturers are invited to write for complete details regarding Universal Cooler refrigerating units.

Universal Cooler Corp., Detroit

### PENN Leads in AUTOMATIC SWITCHES AND CONTROLS

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PENN ELECTRIC SWITCH CO.  
GOSHEN, INDIANA

A COMPLETE LINE OF COMMERCIAL REFRIGERATORS AND DISPLAY EQUIPMENT

STAINLESS STEEL  
GEORGE MANUFACTURING CO.  
WRITE FOR OUR NEW CATALOG



53 YEARS OF SERVICE 1886 1939

**PERCIVAL Line meets EVERY NEED!**

Includes Coolers, Reach-In Refrigerators, Top Type, Double Duty, Delicatessen, Dairy and Produce Display Cases and Percival Condensing Units.

Quality built; corkboard insulated; porcelain clad; beautifully streamlined. Ceiling system is second to none.

Write for attractive prices, literature and Distributor's proposition.

**C. L. PERCIVAL CO.**  
DES MOINES, IOWA

**THE PROFIT LINE FOR '39**

Refrigerator and Compressor sales go together. SHERER offers a complete line of cases, coolers and boxes to be sold with your compressors.

Write for catalog and franchise details, mentioning territory desired.

**SHERER-GILLET CO., Marshall, Mich.**  
Manufacturers of Refrigerated Display and Storage Equipment

**DOORS THAT GLORIFY THE CABINET**

**THE** Ace Hard Rubber "Loxit" units (doors, rails, jams) are the last word in modern display refrigeration door equipment. They not only improve the appearance of your cabinets but the service obtained. Eight out-standing engineering features have won the enthusiastic endorsement of manufacturers and dealers alike. For detailed information and prices write to: American Hard Rubber Co., 11 Mercer St., New York . . . 111 West Washington St., Chicago, Ill. . . . Akron, Ohio.

**ACE "LOXIT" PATENTED DOORS**

Gilmer Puts Dollars in Your Pocket with this

**FREE** Gilmer Belt Catalog "AMERICA'S BELT BIBLE" 1939 Edition

Lists more makes . . . more models . . . more sizes of electric refrigerators than any previous f. h. p. belt catalog ever printed! Also includes washing machines, air conditioners, oil burners, stokers, woodworking tools, etc.

**188 PAGES.. OVER 5700 MODELS.. 149 MAKES** of refrigerators alone. It's Yours FREE . . . Write today to

**L. H. GILMER COMPANY - TACONY, PHILADELPHIA**

**A NEW REFRIGERATOR DOOR GASKET**

1350-N Line—NOW a GREASE PROOF covering firmly anchored to a resilient Sponge Rubber Cushion with a substantial tacking flange. Also made in 1/2" cushion height.

Many types in molded or extruded rubber and in Rubberized fabric coverings available for original equipment or replacement use.

General Offices  
420 North La Salle Street  
CHICAGO

**JARROW PRODUCTS CORPORATION**  
Factories  
Chicago & Grand Rapids

**WATER COOLING EQUIPMENT FOR AIR CONDITIONING**

**WE BUILD ESPECIALLY FOR YOUR OPERATION**

ASK FOR LITERATURE ON DRY-EX COOLERS

**ACME INDUSTRIES, Inc.**  
Jackson Michigan

**WILSON ELECTRIC ICE-MAKERS**

**FIND A READY MARKET . . .**

Hotels, hospitals, clubs, taverns, estates, schools, colleges, institutions of all kinds have need for ice made in the modern, sanitary way with the Wilson Ice-Makers.

The Wilson LIFE-TESTED Cabinet houses (1) the ice-cans on a sturdy rack, (2) a refrigeration coil with one and one-half times the normal ice-making capacity.

With the greatest economy and efficiency Wilson Ice-Makers produce from 75 pounds to ONE TON of ice at one freezing.

The Wilson line is complete, exclusive, and modern. For full information, prospective dealers should address:

**WILSON CABINET CORP.** SMYRNA DELAWARE

## Where Air Conditioning Was Installed In Cedar Rapids, Iowa In 1938

(Data Supplied by Cedar Rapids Div., Iowa Electric Light & Power Co.)

Name	Make of Equipment	Hp.
<b>Offices</b>		
Nash Finch	Custom Built	5
Wm. Crawford	Johnson	5
<b>Barber Shop</b>		
Palace Barber Shop	Custom Built	5

<b>Department Stores</b>		
Killian Co.	Carrier	60
<b>Theaters</b>		
Palace	Custom Built	Deep Well
Rialto	Custom Built	Deep Well

<b>Stores</b>		
Dysarts	Kelvinator	3
People's	Carrier	10
Fannie Farmer	Westinghouse	2
Hatland	Westinghouse	3

<b>Funeral Homes</b>		
Beatty	Frigidaire	4
Brosh	Carrier	5

<b>Dentists</b>		
Lehman	Johnson	5
McKeeby	Johnson	5
Peshek	Johnson	5

<b>Homes</b>		
Dick Meister	Custom Built	5
W. Averill	Carrier	5

<b>Newspaper</b>		
Gazette	Airtemp	50
Gazette (Plant & Office)	Airtemp	10

<b>Tavern</b>		
Magnus Hotel	Westinghouse	10

<b>Dining Room</b>		
Elk's Club	Frigidaire	2

<b>Card Room</b>		
Elk's Club	Kelvinator	3

### Kansas Utility Shows Increase In Taxes

KANSAS CITY, Mo.—Increase in taxes of Kansas City Power & Light Co. since 1915 has exceeded the combined increases in customers, employees, and payroll, the utility points out in a full-page advertisement in the Kansas City Journal.

Jump in taxes since 1915 has been 2,090%, the company notes, while customers have increased 265%, employees 345%, and payrolls 796%.

Wages paid to its 2,017 employees amount to \$10,500 a day, the company states, while direct taxes total \$5,800 a day. Attention is called to the fact that, despite these increased costs, electric rates have decreased steadily.

### Allison Heads Promotion For Keystone Brass

PHILADELPHIA — Samuel H. Allison has been placed in charge of sales promotion and advertising for Keystone Brass & Rubber Co. here, effective June 1.

Mr. Allison has been associated with Hart & Crouse Corp., Utica, N. Y., in a similar capacity for the last four years. Previously he was advertising manager of International Heater Co., Utica, for nine years, and has had considerable newspaper editorial experience on New York state and Massachusetts papers.

### Wisconsin Power Awarded Charles Coffin Medal

NEW YORK CITY — Wisconsin Electric Power Co. has been awarded the Charles A. Coffin Medal for 1938 for its outstanding contributions to the public and to the power and electric industry during the year.

Presentation of the award was made by Horace P. Liversidge during the annual Edison Electric Institute meeting here. Accompanying the award was a check for \$1,000 to be given to the employees' welfare fund.

The company was cited for its notable record in all major fields of activity, including technical accomplishment, public relations, employee relations, efficiency of operation, financial management, and over-all operation.

Rate reductions by the company saved customers more than a million dollars during the year. The company also adopted a new plan for employees' promotion and transfer, as well as a new salary and salary adjustment plan, during the year.

Domestic use of electricity in the area served by the company increased from 913 to 1,004 kwh. over 1937, a gain of approximately 10%.

### First Facsimile Broadcast of Ball Game Is Made

CINCINNATI—The world's first play-by-play facsimile broadcast of a baseball game took place here recently when Crosley's ultra-high frequency station, W8XUJ, broadcast a running account of the game between the Cincinnati Reds and the Pittsburgh Pirates at Crosley Field.

A man in the press box at the field phoned the play-by-play description to the facsimile room, where a rewrite man prepared the material for facsimile transmission. Pictures of outstanding players also were included in the broadcast.

### Dewey Heads Institute

NEW YORK CITY — Frank H. Dewey, manager of the air-conditioning department of Gar Wood Industries, Inc., Detroit, has been re-elected president of Oil Bunker Institute for the 1939 term.

## CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words, four cents each. Three consecutive insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS WANTED

YOUNG SERVICE Engineer desires position with chance for advancement. Age 28, over 3 years' experience in servicing, selling and installing household and commercial equipment. R.A.C.I. student, honest and dependable. Do first-class work—any type machine. Own car and tools. Western location preferred but not essential. Box 1154, Air Conditioning & Refrigeration News.

### ENGINEERING SERVICE

REGISTERED CONSULTING Engineer with twenty years' experience designing and developing heating, refrigerating, and air-conditioning equipment and systems. Complete staff of experts and laboratory available for designing and developing products or laying out systems. Will furnish ideas, or work out yours. F. O. JORDAN (ASRE), 2150 Lawrence, Chicago.

### FRANCHISES AVAILABLE

COMMERCIAL LINE refrigerator display cases, walk-in coolers, and refrigerators; also direct draw, mechanically-cooled beer coolers. Sell with Ehrlich compressors or with any other make. Attractive discounts, also financing arrangements to help sell. 70 years in business. Write for full information. EHRICH REFRIGERATOR MFG. CO., St. Joseph, Mo.

### BUSINESS OPPORTUNITIES

A PROMINENT Ohio Corporation, well established for many years in the appliance and supply field, and with an organization of wholesale men and dealers covering the state, would like to contact responsible manufacturers who are interested in acquiring the services of such an organization to act as their agent throughout this area. Ample merchandising-warehousing and financial facilities. All replies held strictly confidential. Box 1153, Air Conditioning & Refrigeration News.

### EQUIPMENT WANTED

WANTED, any quantity of refrigerator ice cube trays, drip pans and controls, new, used or seconds. Quote quantity and lowest prices. INTERBORO REFRIGERATORS, 350 Pearl Street, Brooklyn, N. Y.

### EQUIPMENT FOR SALE

250 BRAND NEW Frigidaire compressors in original cartons, suitable for 1/4 and 1/2 H.P. high sides. Specifications: Frigidaire part No. 1125-312, twin cylinder, complete with flywheel; bore—1 1/2", stroke—1-7/16". In single lots—\$10.50; 10 or more—\$8.50; 25 or more—\$9.00. F.O.B. New York City. REFRIGERATOR CORPORATION OF AMERICA, 390 Fourth Avenue, New York, N. Y.

R & S PARTS COMPANY opens field to independent service men and former Grunow dealers. Purchase your Grunow parts direct. At reasonable prices. Refrigerant CH<sub>2</sub>-CL<sub>2</sub>, gallon—\$4.00, compressors exchange—\$11.00, Carrene meters exchange—\$3.00, compressor oil per gallon—\$1.75. Many other items not listed. 3577 Fourteenth Street, Detroit, Michigan.

### REPAIR SERVICE

DOMESTIC CONTROLS repaired: Ranco pencil \$1.75, Ranco box \$2.00, General Electric \$2.00, Tag \$2.00, Cutler-Hammer \$2.00, Penn \$2.00, Bishop Babcock \$2.50, Majestic \$2.50, Penn magnetic \$2.50, G. E. Frigidaire \$2.50. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

MAJESTIC, GRUNOW, General Electric and Westinghouse rebuilding. World's largest rebuilders. Prices \$30.00 with 18 months' guaranty. Parts for Majestic and Grunows. GE floats \$2.95. Westinghouse flapper valves \$1.00. 1/4 H.P. Majestic capacitor motors \$3.75. Write for catalog. G & G GENUINE MAJESTIC REFRIGERATOR AND RADIO PARTS SERVICE, 5801 Dickens, Chicago.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

**Filtrine**

Water Coolers—Filters  
Cafeteria—Industrial  
Commercial Remote  
Surge Tanks Pipe Coils

Filtrine Mfg. Co., Brooklyn, N. Y.





## Dealers In Northern California Report '39 Sales Gains

SAN FRANCISCO—Registering a gain of 328 units over the previous month, refrigerator sales by dealers in the San Francisco area totaled 1,118 units in April, according to reports made to the dealer sales promotion department of Pacific Gas & Electric Co.

Although April sales were slightly under last year's total of 1,136 units, sales for the year's first four months were well ahead of the 1938 mark, showing 3,766 units as compared with 2,813 last year.

Electric range sales were down for both April and the first four months of the year, the April total being only four units, against 37 last year, and four months' sales of 31, compared with 44 in 1938.

Both washer and ironer sales were well ahead of comparative 1938 marks. April washer sales totaled 632 units, against 524 last year; the four-month total was 2,643 units, against 2,060 last year.

Following is a tabulated comparison of 1938 and 1939 appliance sales:

	April 1938	April 1939	Four Months 1938	Four Months 1939
Refrigerators	1,136	1,118	2,813	3,766
Washers	524	632	2,060	2,643
Ironers	105	119	349	530
Ranges	3,063	2,951	14,221	16,377
Vacuum Cleaners	1,078	1,510	4,269	6,104

**COMMERCIAL REFRIGERATORS**  
World's most complete line of commercial cabinets—13 to 84 cu. ft. capacity.  
**MIDWEST**  
MFG. COMPANY • GALESBURG, ILL.

**QuikKool**  
BEVERAGE COOLERS  
10 MODELS  
WRITE FOR CATALOG  
**S&S COOLERS**  
LIMA, OHIO

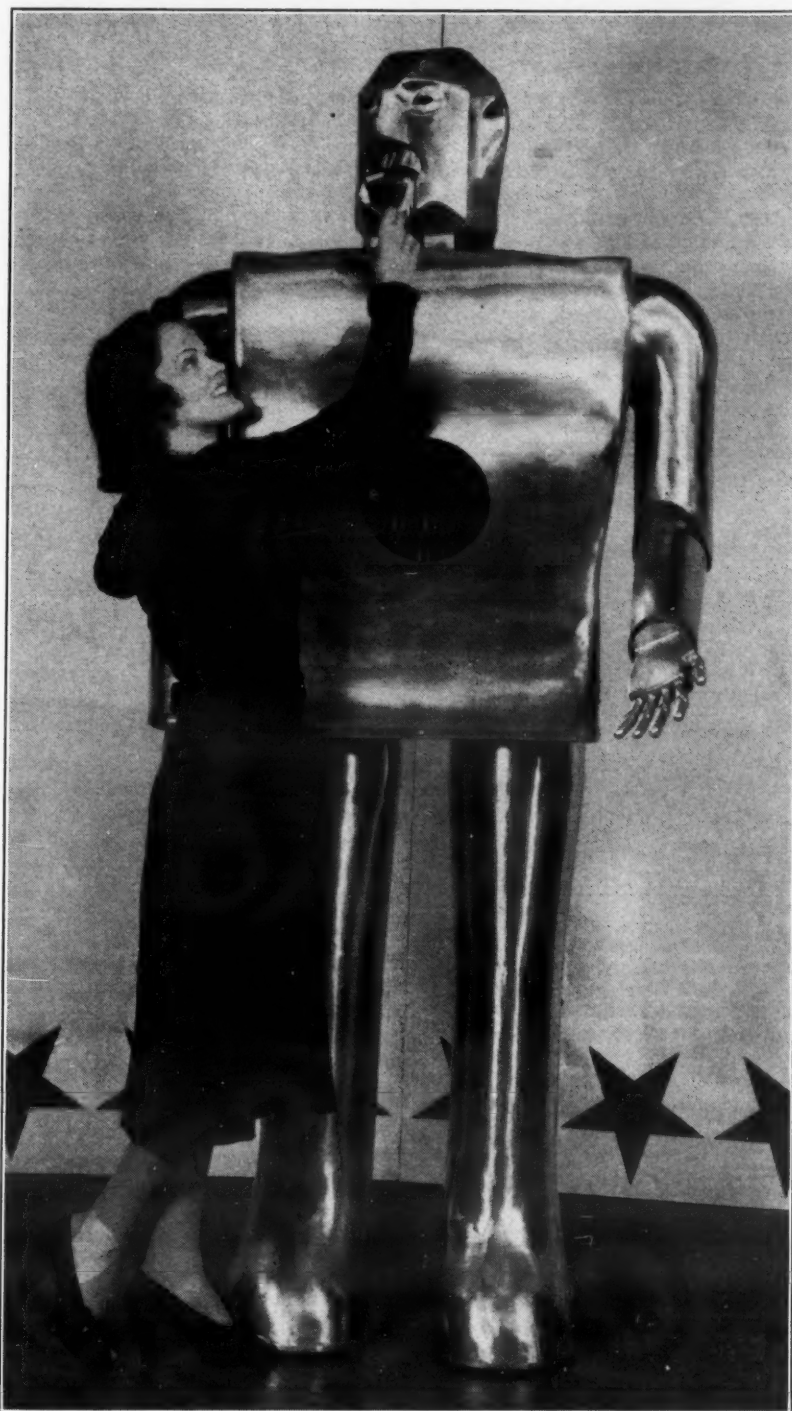
Tests Prove it's Completely Waterproof.  
The New SI Small Capacity  
**MAGNET VALVE**  
Alco Valve Co., St. Louis, Mo.

Use **CHICAGO SEALS** for seal replacements  
A complete line in all sizes  
**CHICAGO SEAL CO.**  
20 North Wacker Dr., Chicago

FOR better faster Bottle Coolers USE  
**DOLECO** VACUUM COLD PLATES  
Write DOLECO REFRIGERATING COMPANY  
5922 N. Pulaski Road Chicago, Illinois

**Anaconda Copper Refrigeration Tubes**  
Unusually soft!  
THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE BRANCH  
General Offices: Weymouth, Conn.

## A Light For Elektro's Smoke



Miss Lois Kendall lights Elektro's cigarette as the Westinghouse Moto-Man gets ready to perform one of his 36 tricks. He'll puff merrily along at the command of his operator. Elektro is a feature attraction at the exhibit building of Westinghouse Electric & Mfg. Co. at the New York World's Fair.

## Refrigeration To Have Prominent Place on M.I.T. Food Conference Program June 28-July 1

(Concluded from Page 1, Column 4)  
neering and Economic Aspects," by Prof. F. J. Beard, Iowa State College. Program of other sessions of the conference follows:

### WEDNESDAY, JUNE 28

9:30 a.m. Symposium on Quality Control in Food Manufacturing.

"The Training of Food Technologists," chairman, Prof. S. C. Prescott, dean of science, M.I.T.

"Quality Control in Food Manufacturing," W. L. Campbell, general manager of manufacturing, Kroger Grocery & Baking Co., Cincinnati.

"Quality Control in the Canning Industry," Dr. E. J. Cameron, acting director, National Canners Association research laboratories, Washington, D. C.

"Quality Control in the Fisheries Industries," Dr. H. F. Taylor, president, Atlantic Coast Fisheries, New York City.

"Quality Control in the Dairy Industries," Dr. L. K. Riggs, director of research, Kraft-Phenix Cheese Corp., Chicago.

"Quality Control in the Packing Industry," Dr. R. C. Newton, chief chemist, Swift & Co., Chicago.

12:30 p.m. Luncheon at Walker Memorial Dining Hall. Special speakers: Dr. Karl T. Compton, president of M.I.T.; Clarence Francis, president of General Foods Corp.

2:00 p.m. Symposium on Food Packaging and Containers. Chairman, Prof. B. E. Proctor, M.I.T.

"Current Advances in Canning Technology," R. H. Lueck, manager research department, American Can Co., Maywood, Ill.

"A Resume of Light on Packaged Foods," William B. Esselen, Jr., and H. A. Barnaby, packaging research division, Owens-Illinois Glass Co., Toledo.

"The Role of the Laboratory in the Problems of the Canners," Dr. S. H. Ayers, director, research department, Crown Can Co., Philadelphia.

"Transparent Food Containers and Wrappers and Their Utilization," O. F. Benz, director Cellophane division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

"The Latex Container and Its Application For Frozen Meats and Poultry," M. T. Rogers, Cryovac division, Dewey & Almy Chemical Co., Cambridge, Mass.

### THURSDAY, JUNE 29

9:30 a.m. Bakery Technology Symposium. Chairman, L. J. Shumaker, president, American Institute of Baking.

"The Physical Properties of Dough in Their Relation to Baking Technology," Prof. C. H. Bailey, division of agricultural biochemistry, University of Minnesota.

versity of Minnesota.

"Recent Developments in the Vitamin Technology of Bread," Dr. C. N. Frey, A. S. Schultz, and L. Atkin, Fleishmann Laboratories, New York City.

"How Baking Technology Affects National Nutrition," Dr. J. A. Tobey, director, department of nutrition, American Institute of Baking, New York City.

"Mold Control in Bakery Products," Dr. F. W. Miller, Jr., E. I. du Pont de Nemours & Co., Inc.

1:30 p.m. Second Quality Control Symposium. Chairman, Dr. F. C. Blanck, food research division, Bureau of Chemistry and Soils, U. S. Department of Agriculture.

"Quality Control in the Carbonated Beverage Industries," J. L. Murphy, vice president, Canada Dry Ginger Ale Co., New York City.

"Quality Control in the Brewing Industries," August Haffenreffer, chairman, technical committee, Master Brewers Association of America, Haffenreffer Breweries, Boston.

"Biochemical Changes in Stored Fish," Dr. S. A. Beatty, Halifax experimental station, Fisheries Research Board of Canada, Halifax, N. S.

"Quality Control Methods For Food Technologists," Prof. B. E. Proctor.

"The Effect of Food Processes on Vitamin Content," Prof. R. S. Harris, M.I.T.

### FRIDAY, JUNE 30

9:00 a.m. Food Engineering Symposium. Chairman, Dr. J. A. Dunn, director of research bakery, Lever Bros. Co., Cambridge, Mass.

"Bakery Taste and Its Control," Dr. Dunn.

"Fundamental Principles of Heat Transfer," Prof. W. H. McAdams, chemical engineering department, M.I.T.

"Engineering Aspects of Heat

Transfer in the Dairy Industry," Loomis Burrell, chairman, Cherry-Burrell Co., Little Falls, N. Y.

"The Design and Operation of Food Concentrating Equipment," Dr. P. D. V. Manning, vice president, Western Condensing Co., San Francisco.

"Humidification of Freezers," Dr. W. H. Cook, division of biology and agriculture, National Research Council, Ottawa, Canada.

"Instruments For Control Operations in Food Industries," Prof. J. W. Horton, M.I.T.

1:00 p.m. Symposium on Food Refrigeration; Mr. Hulse, chairman.

### SATURDAY, JULY 1

9:00 a.m. Chairman, Dr. L. V. Burton, editor, Food Industries.

"The New Food Law and Its Relation to Food Technologists of the Future," Dr. Burton.

"Trends in Food Production and Consumption in the United States," Dr. O. E. Baker, bureau of agricultural economics, U. S. Department of Agriculture.

"Subsistence of the Army in War," Major P. P. Logan, quartermaster corps, U. S. Army.

## Nason Heads District For Westinghouse

BOSTON—Frank L. Nason is now New England district manager of Westinghouse Electric & Mfg. Co. with headquarters here.

Associated with the Boston office of Westinghouse for the past 28 years, Mr. Nason had been serving as manager of the central station division since 1924.

L. E. Lynde, transportation manager of the New England district, will add Mr. Nason's former duties to his own.

## THE BUYER'S GUIDE

## SHARPSHOOTERS



(1) Methyl Chloride (2) Sulphur Dioxide (3) Ammonia  
Good sense says: "take to cover" when these enemies of the serviceman's eyes, nose, throat and lungs go sniping—for they never miss.

The outfit illustrated is easy to buy (inexpensive); easy to carry (light); easy to use (comfortable). Comes all set with cartridges for the three sharpshooters. See at your Jobber's, or order direct today—only \$12.85. Will pay out the first time used.



**CHICAGO EYE SHIELD CO.** 2152 WARREN BLVD. CHICAGO, ILLINOIS

## Refrigeration Products

✓ Check These Money-Makers Into Your Stock Now!

The Patented **LARKIN COIL**  
**HUMI-TEMP** Units **DISSEMINATOR** Pans  
Instantaneous **WATER COOLERS**

Today—See Your Jobber or Write Direct to

**LARKIN COILS, Inc.** General Offices and Factory  
519 Fair Street, S. E., ATLANTA, GA.

Branch Factory, 57-59 Eleventh St., New York City

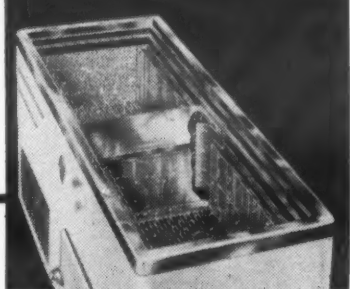
## ATTENTION REFRIGERATION AND APPLIANCE DEALERS

A BLIZZARD FROM THE WEST That has everything

**NO** More Wet Bottles  
More Loose Labels  
More Wet Hands  
More Dissatisfied Customers  
**IT** Is More Sanitary  
Has Fast Dry Cooling  
Has More Capacity  
Has Balanced Refrigeration

Territories Now Open ★ Write for Particulars

**WEBER SHOWCASE & FIXTURE CO., INC.**  
5700 Avalon Boulevard • Los Angeles, California  
Cable "Weberco" Established 1902



## The Market is Ready for GR ROOM CONDITIONERS!



As personal comfort equipment for home or office or as a profit-building appliance for any small business establishment... the GR ROOM CONDITIONER offers an unusual sales opportunity and is a remarkably efficient piece of equipment for the user. Get details. Write:

**GENERAL REFRIGERATION CORPORATION**  
Dept. AC-4 Beloit, Wis., U. S. A.



## PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.  
Complete line of different Models and Capacities.  
Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City Spring 7-1800





## New Orleans Public Service Collects 10,000 Names For Dealers & Offers Premiums To Prospects Who Read Refrigeration Booklet

NEW ORLEANS—Hand-picked refrigerator prospects—10,000 of them—all with incomes above \$1,500 a year, were passed on to dealers by New Orleans Public Service, Inc. to aid in the two-months' spring sales drive that closed this month.

These prospects were selected after a survey by the utility's territorial men, who combed the area for the best sales bets among residents not yet owning an electric refrigerator. A direct mail piece carrying a strong sales story was mailed to the selected list. This piece included the offer of a "Nite-Lite" to anyone reading the booklet on the fundamentals of refrigeration, and answering a series of five questions contained on a return post card bearing the name and address of a local dealer. A letter written on the dealer's letterhead accompanied each mailing.

### HOW DEALERS GET NAMES

Names and addresses of every prospect receiving this mailing piece were given to the dealer whose signature appears on the accompanying letter. The number of names turned over to each dealer was determined in accordance with the size of the sales organization of that dealer. In order to test the effectiveness of the direct-mail program, 1,000 mailings were sent out, and 20% of these were returned.

Dealers were urged to follow-up the prospects given them at once, in order to get the full advantage of the literature mailed.

### PRIZES FOR CONSUMERS

A consumer prize contest to gain the prospects further attention carried with it the offer of 20 merchandise prizes to be awarded to non-owners during the drive. Every non-owner called on will be entered in the contest. Serially numbered stickers were furnished salesmen to place on the refrigerators of persons they contact. These stickers carry the wording, "for safe food preservation, refrigerator temperatures must be between 35 and 50° F."

Customers who have these stickers on their boxes will be automatically entered in the consumer contest. At the expiration of the campaign, the 20 prizes will be awarded to consumers whose numbers have been drawn from a box. The first prize is a Sunbeam Mixmaster, the others being small appliances, fans, and floor lamps.

When placing the numbered sticker on the refrigerator, the salesman writes the name and address of the prospect on a stub attached to it, and returns it to the utility for the prize drawing. Leaflets describing the 20 prizes are given to the prospects, and from there on the salesman goes into his own sales story.

### AWARDS TO SALESMEN

Salesmen also come in for their share of awards, cash prizes being awarded at bi-weekly pep meetings. Each new refrigerator sold during the campaign will entitle the salesman to one chance at 30 cash prizes, ranging from \$2 to \$10. Each co-operating dealer was furnished with prize drawing tickets to be awarded for each sale. These tickets are forwarded to the Public Service Co. Ticket stubs must be retained by the salesman and presented in person at the meetings in claiming prizes.

Meetings are in the form of break-fast get-togethers, where sales are discussed and the prizes awarded.

### COMMERCIAL, TOO

Commercial refrigeration sales also count for prizes. Each ¼ hp. of new commercial equipment sold entitles the salesman to a prize ticket. Credit on any one installation is not to exceed 3 hp.

Free refrigerator thermometers have been supplied to salesmen to use as a "door opener." These thermometers are placed in the box of every customer where the salesman is granted permission to place a sticker, and have "safety zone" temperatures designated on them.

Prime value of the gift thermometer to salesmen is the chance offered for them to call back and see "how the thermometer is working."

As an added help to dealer salesmen, the sales representatives of the utility will turn in signed leads to be added to the individual dealers better prospect list. A big advertising campaign will supplement the campaign, using the theme of efficiency and economy. Sixteen insertions were scheduled in local newspapers, posters being spread on outdoor billboards at heavily traveled arteries in town, cards being used in street cars and buses, and colorful cut-outs furnished dealers for use in store windows and on sales floor.

## Georgia Power Sales Off Slightly In April

ATLANTA—Due to a "slowdown" during the month of April, Georgia Power Co.'s sales of electric refrigerators and laundry equipment for the first quarter of the year lagged behind sales for the same period of 1938, but helping to balance this decrease were unit sales of electric ranges and water heaters, which bested marks for the first quarter of the previous year. Comparative April totals:

	1938	1939
Refrigerators .....	952	868
Washers .....	254	209
Ironers .....	43	35
Ranges .....	451	656
Water heaters .....	375	433

## Cosgrove Heads Refrigerator Sales Group of Nema

NEW YORK CITY—Ray C. Cosgrove of Westinghouse was elected chairman of the sales committee of the Nema Household Refrigeration Section at the spring meeting.

Other members of the committee are George Chapman, General Electric; Glen O'Harra, Norge; Charles R. D'Olive, Crosley; and C. J. Gibson, Gibson.

## Television Operation Is Demonstrated By Philadelphia Group

PHILADELPHIA—Philadelphians had a chance to give television equipment a first-hand tryout at the exhibition and public demonstration sponsored by Electrical Association of Philadelphia in the Franklin Institute June 6 to 9.

Exhibits were arranged so that the public might see and inspect the equipment for both sending and receiving. In addition, visitors were televised so that friends and family could see them in action on the six television screens spotted throughout the space.

The demonstration was designed to emphasize the part played by scientific research and engineering equipment in launching this new industry.

Cooperating with the Electrical Association in the event were Radio Corp. of America, RCA-Victor Mfg. Co., Bell Telephone Co. of Pennsylvania, and Philadelphia Electric Co.

While the television demonstration was the center-piece of the show, Philadelphia Electric showed an adequate wiring installation by means of a "skeleton house"; Bell Telephone exhibited various types of cable; and RCA-Victor showed latest models of its equipment for radio and television receiving.

## 'Air Conditioning No. 1 Opportunity'—Babson

Air conditioning is today's No. 1 opportunity for the two million youngsters who this month will graduate from the high schools and colleges of the United States and Canada and start looking for jobs, Economist Roger Babson says in his syndicated newspaper column.

"I especially have in mind air-conditioning new small houses and selling individual air-conditioning units," he says in picking air conditioning as the best bet among 12 modern industries. "Hotels, offices, restaurants, and stores in the South and Central West must adopt air conditioning to survive."

## Improved Duct Systems Cut Insurance Rates

(Concluded from Page 1, Column 2)

stalled air conditioning during the past two years have objected strenuously to the higher rates.

Reduction of premiums will be made as a result of improved conditioning ducts and methods, and the excellent record of the past year, when no fires of questionable origin were reported in downtown St. Louis.

It was formerly held that circulative spray systems and forced-air cooling added a considerable fire hazard, when fires began in the basements of buildings thus equipped, but this hazard has been practically eliminated by installation of asbestos-lined ducts and fire doors, it was reported.

## Studying Fire Hazards Of Alabama Jobs

BIRMINGHAM, Ala.—An investigation of air-conditioning systems to determine possibility of any fire hazards is being made by the Southeastern Underwriters Association, H. N. Pye, chief engineer, told the recent convention of the Alabama Association of Insurance Agents.

At least two serious fires have occurred, Mr. Pye claimed, where the ductwork of such systems had been lined with an inflammable, felt-like substance, to prevent air chatter. Fortunately, such fires occurred while the systems were shut down, he said, or even more serious results might have followed.

In the past two years, he declared, most sub-standard systems in which such hazards existed had been ferreted out by his organization. He did not say what steps had been taken to remedy the situation, but presumably fire insurance rates were raised, unless the hazards were eliminated.

## New Hotpoint Dealer

SPRING HOPE, N. C.—J. L. Strickland, formerly with O. B. Baines here, has gone into business for himself as a Hotpoint dealer.

## Cutler-Hammer Appoints Crane Vice President

MILWAUKEE—G. S. Crane has been named vice president of Cutler-Hammer, Inc. in charge of sales and engineering. Previously he had been actively in charge of the sales division of the company.

In his new post, Mr. Crane adds to his sales responsibilities the supervision of all development work for the company, and executive control of the engineering and drafting departments, as well as the patent department.

He has been associated with Cutler-Hammer for 29 years, coming to Milwaukee headquarters in 1921 after having managed the Cleveland sales territory. From 1925 to 1935 he was general sales manager, and in 1931 was elected a director.

Mr. Crane is chairman of the advisory committee of the industrial control section of Nema.

## 25 Major Cooling Jobs Under Way In Omaha

OMAHA, Neb.—With 25 major air-conditioning contracts let since Jan. 1 and 50 more firms now considering large-scale installations, a summer of brisk activity for dealers is forecast by W. R. White, head of Nebraska Power Co.'s air-conditioning department.

More than 1,000 hp. load is represented by contracts already let, Mr. White said. Unitary and room cooler sales are showing corresponding advances, he reports.

## Philco Prepares Kits For 'Demonstration Week'

PHILADELPHIA — Advertising kits for use in a nationwide "Demonstration Week" promotional campaign for Philco Conservador refrigerators are now being distributed to dealers, reports E. B. Loveman, Philco advertising manager.

Kits include a plan book for the promotion, special newspaper advertisements and banners, window display materials, and sales-educational literature.

"AND  
*Satisfied*  
CUSTOMERS  
are SO IMPORTANT  
.. to  
EVERY BUSINESS  
TODAY!"\*

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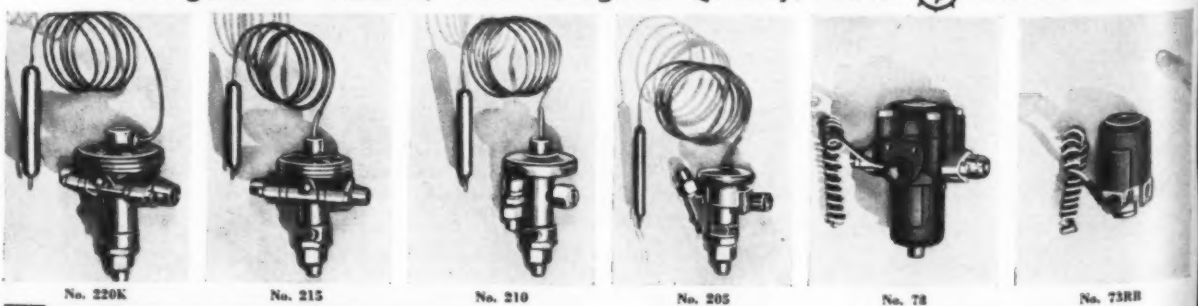
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\*Quoted from Letters on File from leading Service Men commenting on advantage of A-P Valves.

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